MAR 19 1948

Products Finishing

CLEANING

PLATING

POLISHING

FINISHING

MARCH • • • • 1948

LOW-BAKE INTERCHEM ROXAPRENE SAVES FUEL CUTS FINISHING COSTS

WHEN a finish heat-cures in 15 to 30 minutes...at 225° F. to 250° F....it really saves fuel...speeds finishing...cuts finishing costs.

Interchem Roxaprene cures *hard*... in 15 to 30 minutes...at 225° F. to 250° F. *Also*...it can be air-dried...or force-dried at low, steam oven temperatures...to the *same final appearance it has when heat-cured.* You can continue finishing during oven failures, fuel shortages. In critical areas this winter, Finishing Department heads have told us, "*Roxaprene has seen us through the worst fuel shortage we've ever been up against.*"

Roxaprene air-dries, force-dries, *fast*... motor truck manufacturer installs wiring on Roxaprene-sprayed chassis after 8-minute force-dry at 140° F.

You can spray, dip, flow-coat, or roller coat Roxaprene. Base is *chlorinated rubber.* Finish is resistant to weather, salt atmosphere, chemical fertilizers, battery acids, alcohol, alkali, anti-freeze... is ideal for outdoor equipment...has been used on tens of thousands of motor trucks, tractors.

Write for brochure with detailed specifications for drying, application, adhesion, flexibility, resistance to chemicals. Address all inquiries to Interchemical Corporation, Finishes Division, 57 State Street, Newark 1, New Jersey.

Interchem *Finishes*

FRED W. VOGEL, *Editor*

ROBERT I. SHORE
Associate Editor

Consulting and Contributing Editors
H. LEROY BEAVER
ALLEN G. GRAY

GENE J. SCHWARBER
Advertising Manager

J. C. DUFF
Circulation Manager

NORMAN S. ROGERS
Art Director

RICHARD S. KLINE
GEORGE E. HAY
431 Main St., Cincinnati 2
MAin 0182

G. M. FILLMORE
342 Madison Ave.
New York 17
Murray Hill 6-3899

JOHN M. KRINGS
Tribune Tower, Chicago 11
Delaware 5441

CHARLES H. DEILY, JR.
351 Mattison Avenue
Ambler, Pa.
Ambler 0339

MEMBER

CCA

Published monthly and copyrighted (1948) by

GARDNER PUBLICATIONS, Inc.
431 Main St., Cincinnati 2, Ohio

Howard Campbell .....*President*
John M. Krings.....*Vice President*
Granville M. Fillmore..*Vice President*
Margaret L. Gardner.....*Secretary*
Richard S. Kline.....*Treasurer*

Printed in U. S. A.

Products finishing Contents

Volume 12 MARCH, 1948 Number 6

Editorial 21

Finishing the Evans Space Heater..... 22
By Robert B. Evans

Protective Organic Coatings 30
By L. A. Critchfield

Barrel Finishing of Metal Products
By H. Leroy Beaver

Part 19—The Use of Wood Lined Barrels for Abrasive Operation and the Relation of Barrel Size to Size of Parts To Be Processed.....50

Abrasion Testing of Anodized Coatings..... 66
By Arthur P. Schulze

Finishing Clinic
By Dr. Allen G. Gray

—Scientific Methods Are Available for Treating Plating Room Wastes 74

—Protective Metallic Coatings from Salt Baths.... 86

—A New Instrument for Measuring the Flexibility and Adhesion of Surface Coatings 88

—Surface Preparation Important in Painting Exterior Steel Surfaces 92

Cleaning Small Parts 96
By John E. Hyler

News of the Industry..... 100

Finishes That Aid in Appearance and Utility..... 112

New Equipment and Materials 116

The Finishing Touch 140

Opportunity Section 141

Catalog Library 142

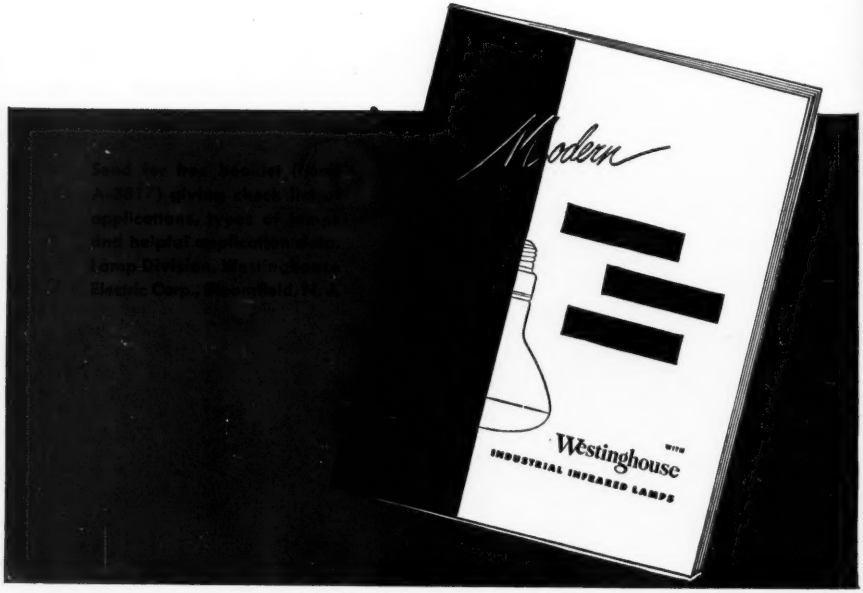
Index to Advertisements 144

WESTINGHOUSE *Infrared Lamps*

Experience in a wide variety of applications has proved to users that Westinghouse Infrared Lamps do the job faster, easier, cheaper. Here's why:

- **Highly efficient source of heat**
- **Saves man power**
- **Saves space**
- **No standby loss**
- **Flexible**
- **Safe and comfortable**
- **Small initial investment**
- **Low maintenance cost**

Check into your present baking, drying and heating methods—then get the facts on radiant heat processing with Westinghouse Industrial Infrared Lamps.



PRODUCTS finishing

Be Sure to Count Everything . . .

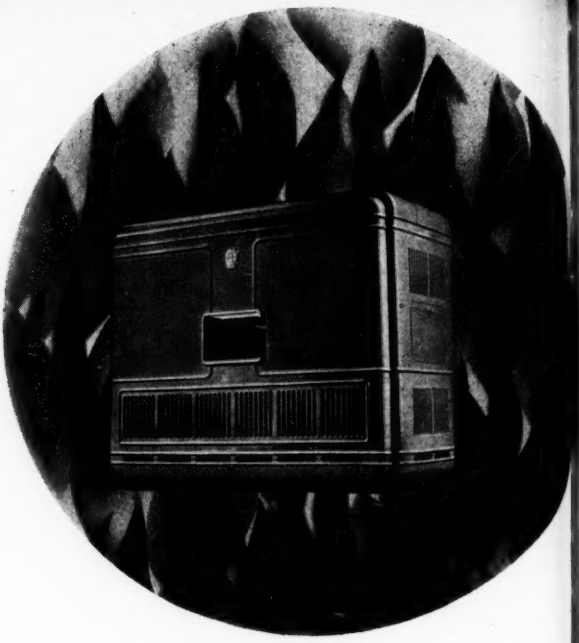
EVERY organic finish is a compromise. The perfect finish has not yet been developed; that is, the coating of 100 per cent solids and low cost, which is effortless to apply, dries instantly, lasts forever, and provides in every way everything of which the mind of man can conceive as being necessary or desirable in a finish. Thus, the man who desires to extend the usefulness of his product through its coating must ask himself certain questions.

In every case, the first question about any finishing material concerns quality. To be considered for a new application, or to be competitive with a material already in use, standards of durability and appearance must be met. In other words, the material must be capable of statisfactory service in the field. After quality, the cost per unit finished must be considered, with special attention given to the opportunity for economy. Next in line to be considered is performance in production. Thus, difficulty in handling the material and the necessity for extra equipment or special methods are definitely factors in the choice of a finishing material. Last but definitely not the least of the factors to be considered are service, dependability, and confidence of the supplier. While it may be more difficult to place a quantitative value on these, they are important in making a final decision.

The selection of a finish is dependent on the use of the end product, but no matter what the product, the finish should be a balanced one in which an outstanding property is not gained at the sacrifice of other necessary properties. Your competent supplier can help you be sure that your selection has included all the factors necessary for a balanced finish for your product.

MARCH, 1948 Vol. 12, No. 6

Finishing the Evans Space Heater



An outline of the procedures employed by Evans Products Company in the organic finishing of its Teague-designed Super-Deluxe heater for home use

By ROBERT B. EVANS
Vice President in Charge, Heating and Appliance Division
Evans Products Company, Plymouth, Michigan

PRODUCTION operations on the cabinet of the Super-Deluxe home heater produced by the Evans Products Co., Plymouth, Mich., have been streamlined to include continuous monorail handling of the work during finishing. These operations also include provision for a one-coat paint application.

Streamlining of production to continuous monorail and conveyor belt operations was a major determining factor in the decision of the company to purchase its new and modern plant at Plymouth, Michigan. This plant contains 330,739 square feet under roof with all facilities on one floor to afford maximum stock handling efficiency and straight-line production.

A high-grade automotive body steel is used in the manufacture of the Evans home heater. This deep-drawing steel is used with high-grade stamping dies to obtain a high quality and uniform stamping, and possesses a high affinity for paint, thus making possible the production of a finish of unusual beauty and durability.

Evans has developed a paint testing method whereby any paint selected for use on its home heaters is tested at temperatures up to 500 deg. F. The method makes use of an electric oven radiating heat to only one side of a

piece of metal, leaving the other side exposed to normal room temperature. In this manner, the actual conditions to which paint on a home heater is subjected in normal operation is simulated. Following these tests, the paint with the highest heat resistant qualities is selected. This paint is then applied to a heater and subjected to a similar test in actual operation before being specified as a standard Evans paint.

Following drawing of the cabinets in 500-ton hydraulic presses, the cabinet panels are conveyed to the spot-welding department where they are firmly spot-welded by skilled workmen, carefully trained to eliminate poor spot welds and burns. The cabinets are then inspected. Any small dings present are removed by expert sheet metal workers, and any rough spots detected are ground and buffed. The cabinets are then subjected to thorough inspection before being placed on the monorail to be used in conveying the cabinets through the finishing process.

The monorail first transports the cabinets through a mineral spirits bath where the drawing compounds used in the deep drawing process and any accumulation of dirt are removed. They are then conveyed to a one-stage automatic washer where high pressure sprays bathe the cabinets with a phosphoric acid emulsion, removing any remaining grease or dirt and any light rust or fingermarks. This treatment also prepares the cabinets for final painting since it produces a uniform coating of iron phosphate over all the exposed surfaces of the cabinets. The phosphate coating, which provides an excellent bond for the paint, eliminates the necessity for a preparatory coat

Fig. 1—Evans Super-Deluxe home heater cabinets are carefully inspected as they leave the automatic infra-red dryer prior to conveying to the paint spray booth.

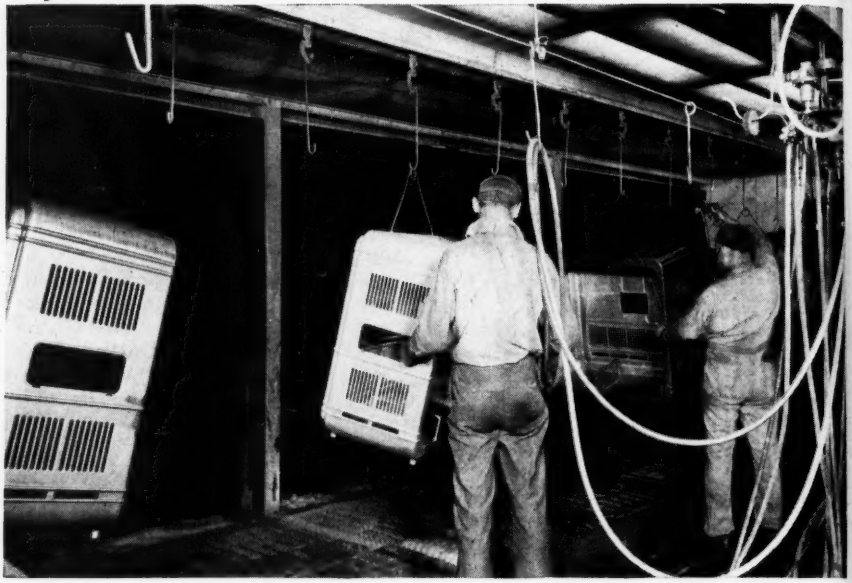


Fig. 2—Expert spray gun operators, trained to make accurate adjustments of gun pressure to compensate for changes in paint viscosity caused by ambient temperatures, spray the Evans Super-Deluxe home heater cabinets with specially developed heat-resistant enamel.

of paint and makes possible the production of a long-lasting finish.

After phosphate coating, the cabinets are conveyed along the monorail to an automatic dryer where all traces of moisture are removed. The dryer contains blower fans and banks of 250-watt infra-red lamps. Upon emerging from the dryer, the cabinets are carefully inspected, as shown in Fig. 1, and then conveyed to a paint booth of the water-wash type. Spray gun operators, who are trained to make accurate adjustments of gun pressure to compensate for changes in paint viscosity caused by changing ambient temperatures, spray the cabinets with even coats of a specially developed heat-resistant enamel, as shown in Fig. 2.

The heater cabinets, featuring a low

INDUSTRIAL OVENS FOR EVERY PURPOSE TO 1000° F.

HEATING: Gas • Electric • Oil • Steam • Coal • Coke • Waste Heat • Direct • Indirect.

TYPES: Conveyor • Trolley • Truck • Car • Lift Rack • Shelf • Drawer • Special.

Furnished Complete with Supplementary Equipment

DESIGNED AND BUILT FOR HIGH OPERATING ECONOMY

YOUNG BROTHERS CO. 6513 MACK AVENUE DETROIT 7, MICHIGAN

WHY BE SATISFIED WITH LESS?

• This A-F Metal Products Cleaning Machine was designed to be "built into" a completely co-ordinated conveyorized production line of a leading midwest manufacturer.

By taking out a section of trolley track and connecting to the track which is welded throughout the length of the machine it became an integral part of production flow. Baskets of small metal products are carried through washing, rinsing, blow off and drying operations on the overhead trolley conveyor.

If *you* have a difficult metal product cleaning problem that one of our "standard" machines will not solve why not discuss your problem with A-F engineers? A discussion places you under no obligation. And remember the best Metal Products Cleaning Equipment for *your* use quite often costs you less in the end. Write for illustrated literature—today!

THE ALVEY-FERGUSON COMPANY

625 Disney St. ***Established 1901*** **Cincinnati 9, Ohio**

Offices in Principal Cities—Coast-to-Coast

CONVEYING A-F MACHINERY **Alvey-Ferguson**

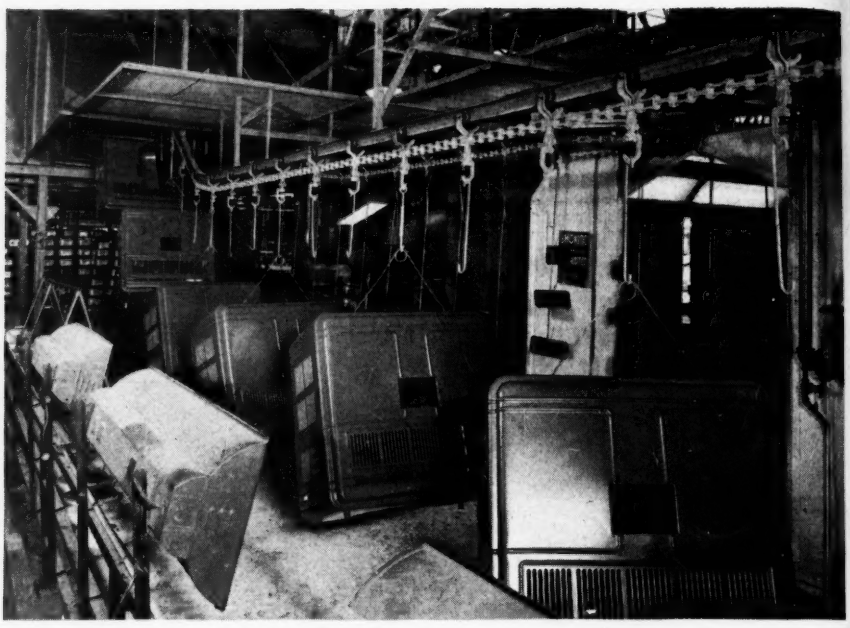


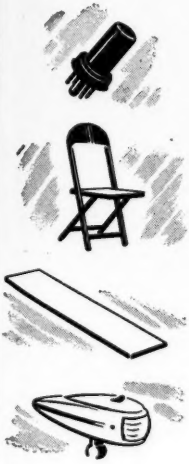
Fig. 3—Evans Super-Deluxe home heater cabinets are shown leaving the gas baking oven where they have been baked for 20 minutes at a temperature of 400 deg. F. to provide a hard, lasting enamel finish.

boy console design developed by Walter Dorwin Teague, are then conveyed directly to a gas baking oven where they are baked for 20 minutes at a temperature of 400 deg. F., which provides for a hard, lasting enamel finish, as shown in Fig. 3. From the baking oven, the cabinets are conveyed through the finishing department's inspection section where they are subjected to a rigid final inspection for uniformity of coat and paint adhesion. The cabinets are then conveyed to the assembly line where they are assembled with the necessary burners and control devices.

MGC Products. The Motor Generator Corp., Box PF-317, Troy, Ohio, has released a folder which illustrates and describes the complete line of MGC products, including motor generators ranging in capacity from ½ to 20 kw.; metal coloring and finishing equipment; materials handling equipment; electroplating equipment; battery charging equipment; special battery chargers; electro-power units; buffers and grinders; air compressors; magnet service generators; and aviation service equipment. Copy free upon request.

"Manhattan Rubber Products for Industry." Publication of the sixth edition of "Manhattan Rubber Products for Industry," a condensed catalog of mechanical rubber goods, is announced by the Manhattan Rubber Division, Raybestos-Manhattan, Inc., Passaic, N. J. Described in the catalog are many mechanical rubber products and special items. Particular emphasis is given to transmission and conveyor belting, V-belts, hose, engineered molded products, rubber roll coverings, tank linings, and abrasive wheels. Copy free upon request.

YOU'LL SAVE TIME —AND MONEY!



Half the coating material, higher productivity per machine hour . . . plus a higher quality finish—radio tubes at RCA Victor, Harrison, N.J.

75% less labor required, production increased . . . paint cost per unit cut more than 50%—folding chairs at Clarin Mfg. Co., Chicago, Illinois.

Consistently uniform finish on matching wall panels . . . continuous production with almost 50% savings in paint—Martin-Parry Corp., York, Pa.

Twice the production in much less booth space . . . paint goes three times as far, and finish is improved—bicycle lamp shells at Delta Electric Co., Marion, Indiana.

Let RANSBURG test coat your product . . . and demonstrate the quality control and savings YOU can effect!

For a more complete explanation of the way Electrostatic Spray-Painting can meet your finishing requirements, please write for our new booklet . . . without obligation.

1248 BARTH AVENUE • INDIANAPOLIS 7, INDIANA

Protective Organic Coatings

By L. A. CRITCHFIELD
District Manager, Dayton
United Chromium, Incorporated

MANY of us who were engaged in producing finishes which might be classed primarily as decorative have had to work entirely with coatings for protective purposes only. While we coated many parts with various electrodeposited metals or anodized films, others required the use of protective organic coatings. In numerous cases, we were called upon to apply these organic materials, which brought us many new and strange problems.

In order to more fully appreciate these problems, let us examine the protective organic coatings to determine of what they consist and how they are best used. Since we are concerned primarily with their protective value rather than their decorative effect, we will pay but little attention to their color and appearance and give most attention to their various functional properties.

The most practical method of doing this, perhaps, is to consider the method by which the coating material changes or converts from a liquid into a solid film. It will be found that this conversion is accomplished by three general methods; evaporation, as with lacquers and other air-drying materials; oxidation, as with oil paints and varnishes; and polymerization, as occurs with many synthetic materials. In most cases, two or all of these phenomena take place.

The simplest type of coating material is one produced by dissolving a solid in a volatile liquid. On application, the liquid passes off as a vapor leaving a thin film of the solid; i. e., drying takes place by simple evaporation. The drying may take place naturally or may be forced by the use of heating means.

Should an opaque coating be required, a finely divided pigment would be dispersed or mechanically mixed into the material. This is usually accomplished by grinding the pigment with the soluble solid. When the coating dries, the pigment is firmly held by the soluble material which acts as a binder. A simple example of this type of coating is the water color paints which we used as school children, wherein a water soluble gum is ground with the coloring matter and the resulting mass, after moistening, is pressed into the form of a cake.

Lacquers

The term "lacquer" properly indicates that the material dries by evaporation and forms a film from the nonvolatile constituents. Thus, a spirit lacquer would be composed of a resin or gum dissolved in spirits or alcohol.

A familiar example of a spirit lac-

THE
UDYLITE
WAY...

● At least 50% more Nickel plating with the same voltage, in the same time, without additional manpower or costly equipment alteration.

That's the Udylite Way—based on specially developed Udylite Brighteners in a high-chloride bath. The result is *faster* plating and *better* plating because the Udylite Process offers: Exceptional tolerance to contamination; uniform deposits over a wide range of current densities; high rate of brightening; less tendency to form nodules; simple to operate and control.

A Udylite Technical Man will gladly show you many other ways Udylite can make your business profitable. Write, wire or 'phone the Udylite Corporation, Detroit 11, Michigan. Offices in Principal Cities.

PIONEER OF A BETTER WAY IN PLATING...

TESTED SOLUTIONS • TAILORED EQUIPMENT
AUTOMATIC CONTROL FOR METAL FINISHING

THE
Udylite
CORPORATION

The DUST-ALL
TACK RAG
Collects Dust and Dirt Too!

DUST settles on surfaces and unsatisfactory finishes result. The *Dust-All* Tack Rag collects Dust. It is the quick economical means to assure good finishes.

Get the *Dust-All* Tack Rag in the Red Checkered Bag at your Dealers or write us.

HARDING
MANUFACTURING CO.
10614 Gratiot Ave., Detroit 13, Mich.

quer is shellac. In fact, the terms "shellac" and "lacquer" have the same derivation. Shellac is a resinous secretion of a scale insect, Lascifer Lacca, of the bug family, which swarms on trees growing in sections of India. The insects live on the twigs of trees, particularly certain species of the genus piccus. Various host trees affect the life cycle of the insects and produce "lacs" of different qualities. Sticklac is the natural substance, the incrustation to the insects and the small twigs. It is broken off and the coloring matter partially removed. The residue is melted and strained through canvas. It is then called Shellac.

Chinese lacquer and Rhus lacquer, or Che Shu lacquer, are made from the sap of the tree rhus vericiflua, the chief ingredient of urushoil. These are not true lacquers in that they dry by the absorption of oxgyen from a cool moist atmosphere. One disadvantage of this type of lacquer lies in a poisoning effect upon the epidermis, giving an effect similar to that of poison ivy. Burmese lacquer or Thitsi is made from the sap of an oriental tree and is chiefly thitsiol or laccol. It is very similar to Chinese lacquer but does not have the poisonous effect in contact with the skin. Japanese and Formosan lacquers are similar to the Chinese lacquers.

The modern lacquers are generally made from film-forming materials dissolved in appropriate solvents. Perhaps the most common group of these is the cellulose derivative lacquers such as cellulose nitrate, cellulose acetate, ethyl cellulose and benzyl cellulose.

Many great industries make use of raw materials consisting largely of cellulose. Lumber, textile, paper, mercerized fabrics, vulcanized fiber, waterproof paper, artificial silk, smokeless powder, dynamite, imitation leather, celluloid, photographic

When You Specify **B&A** *Reagents You Get*

WHAT YOU WANT
Extensive selection . . . over 1,000 purity products to choose from

THE WAY YOU WANT IT
Reagent, A. C. S. purity . . . B&A Reagents always meet or exceed exacting A. C. S. specifications

WHERE YOU WANT IT
Readily available . . . B&A has its own distributing stations in key cities from coast to coast

1 You can save time . . . effort . . . money in your laboratory work, when you obtain your month-to-month chemical requirements from a single source. Remember—more than 1,000 purity products of Reagent A. C. S., C. P., U. S. P., N. F. and Technical grades are listed in the 200-page B&A products book. Use it as your buying guide. For free copy, write the nearest office listed below.

2 The primary requisite of a reagent is purity. Since 1882, B&A Reagents have been recognized as "setting the pace in chemical purity." They always meet or exceed A. C. S. specifications—the purity standards set by the chemical profession itself.

3 Extensive stocks of B&A Reagents are carried at General Chemical's own chain of distributing stations strategically located throughout the country. Stocks at the station serving you can be built to supply your special needs readily, rapidly and regularly. Just outline your requirements to your B&A Salesman.

This three-way personalized service by B&A can help make your laboratory procedure more efficient . . more productive. Arrange for it now by writing or phoning the nearest office below.

REAGENTS
B&A
STANDARD OF PURITY
FINE CHEMICALS

BAKER & ADAMSON *Reagents*

GENERAL CHEMICAL DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 RECTOR STREET, NEW YORK 6, N. Y.

Offices: Albany* • Atlanta • Baltimore • Birmingham* • Boston* • Bridgeport • Buffalo* • Charlotte* Chicago* • Cleveland* • Denver* • Detroit* • Houston • Kansas City • Los Angeles* • Minneapolis New York* • Philadelphia* • Pittsburgh* • Portland (Ore.) • Providence* • St. Louis* • San Francisco* Seattle • Wenatchee (Wash.) • Yakima (Wash.)
In Wisconsin: General Chemical Company, Inc., Milwaukee, Wis.
In Canada: The Nichols Chemical Company, Limited • Montreal* • Toronto* • Vancouver*

SETTING THE PACE IN CHEMICAL PURITY SINCE 1882

* Complete stocks are carried here.

films, and lacquers are a few of the products originating from cellulose.

Cellulose is a carbohydrate of the formula $(C_6H_{10}0_5)x$ which forms the main constituent of the walls and skeletons of vegetable cells. It is found in an almost pure state in absorbent cotton, filter paper, and pith. Cellulose itself is colorless, transparent, and insoluble in water, alcohol, ether and other solvents but is dissolved by concentrated solutions of zinc chloride, ammoniacal copper hydroxide, or carbon disulphide containing caustic alkali. When treated with sulphuric acid, there is a formation of amyloid which is the same as parchment paper. Cellulose has the properties of an alcohol and may accordingly be brought into combination with mineral or organic acids to form esters—cellulose nitrate, cellulose acetate, methyl cellulose, ethyl cellulose, and other compounds.

Cellulose nitrate is obtained by nitrating cellulose from cotton linters, cotton waste, wood pulp, and other forms. The cotton is treated for a short time with a diluted mixture of nitric and sulphuric acids to convert it into a mixture of cellulose nitrates commonly known as soluble cotton, soluble nitrocellulose, or pyroxylin which is used for many purposes.

Pyroxylin dissolves in a mixture of alcohol and ether to form collodion. When heated and kneaded with camphor, it forms celluloid which can be molded under pressure into an unlimited variety of forms. Because of its high inflammability, this use has been largely surplanted by the many and more recently developed plastics.

When cotton is nitrated with a more concentrated mixture of acids or when the mixture is allowed to act for a longer time, the reaction proceeds past the pyroxylin stage and a more highly nitrated product, no longer soluble in alcohol-ether, is formed. This is gun cotton or insoluble nitrocellulose. This product is mixed with nitroglycerin to produce smokeless powder.

By controlling the strength of acid, time, temperature, and proportion of acid to cellulose, products suitable for use in lacquers are obtained. By substituting other chemicals for the nitric and sulphuric acids, various other cellulose esters with desirable properties can be produced.

Thus, by the action of acetic acid and acetic anhydride on cotton, the latter is converted to cellulose acetate which is generally soluble in acetone and many organic esters. When such solutions evaporate, the cellulose ester is left behind as a tough, transparent, waterproof film. Since the cellulose acetates are non-inflammable, they are used as lacquers for metals, as airplane dopes, and in the preparation of imitation leathers, artificial silks, and non-inflammable films.

The preparation of lacquers from base materials of this sort is not quite

UNISOL

PAINT STRIPPER

A NEW DEVELOPMENT FOR INDUSTRIAL PAINT STRIPPING

- Non Inflammable
- Used Cold
- Requires No Rinse
- Works Rapidly on All Types of Finishes
- Will Not React or Affect Any Metal, Ferrous or Non-Ferrous
- Non-Injurious to Hands or Clothing
- Unisol Liquid—For Dipping, Dries Rapidly With No After Film to Interfere With Repainting

Samples and further information supplied on request.

CHEMCO PRODUCTS COMPANY

Incorporated

1059 EAST SEVENTY-SIXTH STREET
CHICAGO 19, ILLINOIS

ZAPON

One Coat Hammered Finishes..

..stable in the container ..simple to apply

When you use this new ZAPON One Coat Hammered line—you'll get the effect you are after without having to consider a lot of "Don'ts." The application is simple and easy—one pass with a spray gun usually does it—and the product is stable in the container.

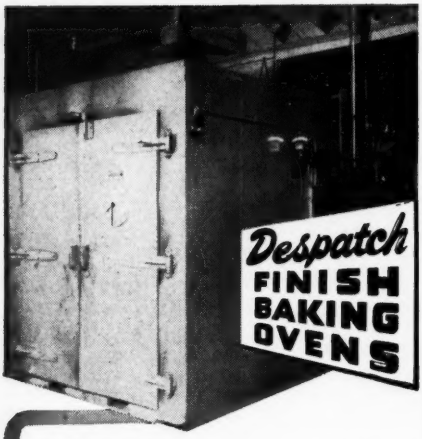
The effects you get will be beautiful and uniform. There's eye appeal in the depth of the finish—the brilliance of the colors. If properly applied it will disguise the appearance of metal imperfections, at the same time providing a smooth, dust-free surface.

ZAPON One Coat Hammered is available in lacquer or synthetic base, for either bake or air dry.

As always, ZAPON technical service will recommend the application to fit your problem. Just write or wire Zapon Division, Atlas Powder Company, Stamford, Connecticut, or North Chicago, Illinois.

ZAPON

Production Finishes



Cut Costs, Increase Output with this Fast-Baking Oven

Despatch "RS" Finish Baking Ovens are very successful for repair shops and plants with small batches of products. Up to 50% faster baking . . . high volume air flow . . . approved safety system . . . gas or electric . . . moderate investment and low operating cost. Comes ready for operation—no engineer required to set it up.

Applications: For baking thermoset finishes on coils and stators; phenolic coatings on grills and unit assemblies; finish work on japans or lacquers; drying latex, ink, glues, asphalt; light core baking, dehydrating; preheating plastics, aging, and drying, etc. Fast curing or drying of synthetic films, dulux, lacquer, enamels.

Write for bulletin on RS-4 and RS-5 Ovens.

DESPATCH
Established OVEN CO. in 1902
327 DESPATCH BLDG. MINNEAPOLIS 14, MINN.

as simple as with shellac or other spirit lacquers. If, for example, we should dissolve cellulose nitrate in a single, simple solvent and attempt to use it as a lacquer, we would probably find that we had a product difficult to apply and that the resulting film had limited uses. We might find, if we used a solvent with a low boiling point and consequently a high evaporation rate and attempted to apply our product by spraying, that the solvent would actually evaporate before the spray even reached the work, leaving a dry, rough coat which would not flow. Or, should we succeed in obtaining a film, we might find it to be brittle and lacking in adherence.

These difficulties can, fortunately, be overcome. By properly blending solvents of various boiling points, it is possible to control the rate of drying and obtain materials suitable for application by spraying, brushing, dipping, centrifuging, or roller coating.

Flexibility, adhesion, elasticity, elongation, and other desirable properties in lacquers are imparted by the use of materials known as plasticizers. Among the many compounds used for this purpose are certain oils and various chemicals having an exceedingly slow evaporation rate at ordinary temperatures. Castor oil, dibutyl phthalate, dioctyl phthalate, tricresyl phosphate and camphor are examples of well known plasticizers. Wide varlation in film properties of lacquer can be obtained by using the proper plasticizer in the correct proportion.

Oil Paints, Varnishes and Enamels

Materials which form films by oxidation are commonly known as paint, varnish, or enamel. The terms, as commonly used, overlap considerably without complete distinction. As a general statement, paints are always pigmented and are furnished in a wide variety of color; varnishes are usually clear or tinted with oil soluble

Stevens ABRASIVE CEMENT—(Wheel Cement)

A cold cement which replaces glue in a wide variety of operations as a means of bonding abrasive grain to the face of polishing wheels and belts. Its use in the preparation or "setting up" of wheels and belts is a simple and easy procedure compared with the use of glue.

Stevens Abrasive Cement insures "longer life" to wheels or belts on most jobs. Polishes more pieces per hour because it cuts faster, and as wheels and belts need less frequent changing, it reduces "shut-down" time.

Drying time is much shorter, permitting wheels or belts to be put back in service more quickly.

In addition to these and many other advantages its cost is much less than glue. It is shipped in 1, 5 and 10 gallon pails, and 50 gallon drums.

Write for a working sample—try it in your own plant. Once you try out Stevens Abrasive Cement, chances are you'll become another consistent user of this efficient and economic Stevens Product.

STEVENS TRIPOLI COMPOSITION

Regardless of the metal or cleaning methods you are using, Stevens Tripoli Composition is available in grades to meet every finishing requirement . . . from slow and medium hand buffing operations to high peripheral speeds and automatic machines.

STEVENS GREASELESS COMPOUND

Made in several types and grades, Stevens Greaseless Compounds produce an excellent "Butler," "Satin" or "Matte" finish. They can also be used to provide a polishing wheel with a very flexible face for difficult jobs.

Try these Stevens Products in your own plant. Write our nearest office, tell us the metal used and type of operation. We will gladly send working samples with instructions for use; or, have our representative call and discuss your problems in person.

FREDERIC B. STEVENS INCORPORATED

DETROIT 16, MICHIGAN

- NEW ENGLAND — 166-182 Brewery St., New Haven, Conn.
- NEW YORK and PENNSYLVANIA — 93 Stone St., Buffalo, N. Y.
- INDIANA — Hoosier Supply Co., 36 Shelby St., Indianapolis, Ind.
- CANADA — FREDERIC B. STEVENS OF CANADA, LIMITED
  - 1262 McDougall St. — Windsor, Ontario
  - 41 Dover Court — Toronto, Ontario

dyes and dry to a higher gloss and harder finish than paints; and enamels might very well be called pigmented varnishes.

A familiar example of materials which form films by oxidation is ordinary house paint. A good paint consists of at least three ingredients:

(1) A pigment, or body, having good opacity and reflectivity, and consequently great capacity for covering up and hiding the surface on which it is spread. Substances used for this purpose include basic lead carbonate, basic lead sulphate, titanium dioxide and zinc oxide.

(2) An inert filler, or extender, such as barium sulphate, chalk, or china clay. Such a substance in itself has no great "covering power"; but it may be added to the main pigment in a small proportion to prevent the latter from being spread out too thin, and in some cases to make it cling more readily to the particular surface on which it is spread.

(3) A vehicle, or drying oil, which may be defined as an oil which, by taking on oxygen from the air, is converted into an impervious solid film. Linseed oil, obtained from the seed of the flax plant, is a familiar drying oil.

The pigment and filler are incorporated into the drying oil by means of special grinding machinery that reduces the particle size to the utmost possible degree and produces a homogeneous, viscous mass needing only to be thinned by small amounts of turpentine, boiled linseed oil, or naphtha to be ready for use. The vehicle must dry by oxidation within a reasonable time, and must contain no more than a trace of acid. Pure linseed oil is best, although the admixture of small amounts of turpentine is permitted. In addition to these three constituents, a colored pigment needs to be added if the paint is to be anything other than white.

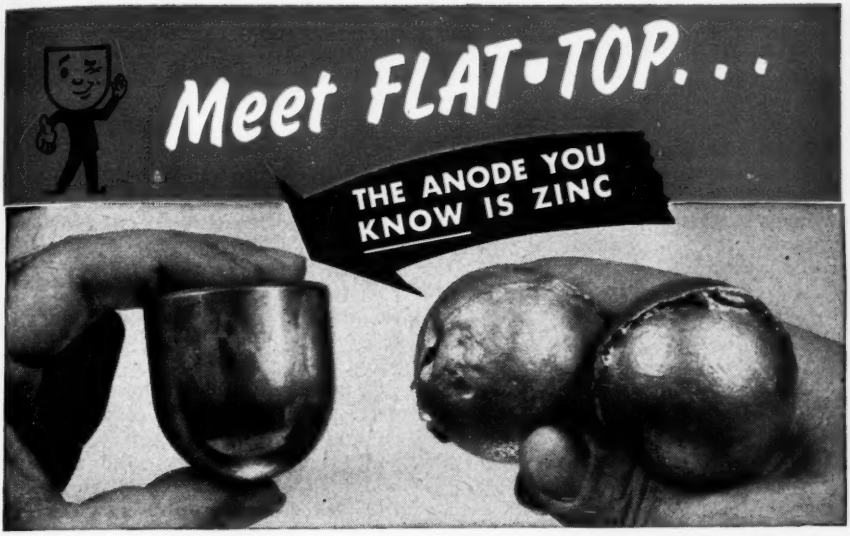
Primers are often used as the initial coat under oil paints or other materials where high protection against corrosion is required. Red lead, iron oxide and zinc chromate are some of the generally used pigments for primers. In this connection, it is interesting to note that one of England's outstanding chemists, Dr. U. R. Evans of the Oil Colour Chemist's Association, has recently published a theory relating to passivity as induced by pigments. His work shows that the protective action of paints can be classified as (1) mechanical exclusion of corrosive substances and (2) chemical formation of a film on the metal which keeps it passive. Unless there is present a substance which renders the metal passive, protection is possible only if the film is waterproof and continuous. His experiments with iron oxide paints, with which the protective action is solely mechanical, and red lead, which protects chemically, bring out many differences. The pro-

WOOD TANKS for
Plating and Pickling

Excellent Service on all types of wood tanks for any purpose. Built to your specifications by one of America's oldest tank specialists.

Ask for estimates and suggestions.

KALAMAZOO TANK & SILO CO. • **Kalamazoo 16, Mich.**



FLAT ▼ TOP is a *different* zinc anode. Its difference in shape alone is going to end some of the worst problems in your shop. But **FLAT ▼ TOP** has 6 IMPORTANT ADVANTAGES —

FLAT ▼ TOP'S distinctive appearance makes recognition *sure*. Stops mixing zinc with cadmium or tin balls. Eliminates dumping, saves time and material.

FLAT ▼ TOP'S area is 20% to 25% greater than a ball. More weight per anode reduces loadings, cuts labor.

FLAT ▼ TOP'S original shape retained — even when dissolved to 25%. A glance avoids incorrect reloading of the anode basket.

FLAT ▼ TOP is 99.99% *pure* zinc, highest purity anode zinc available. Not readily obtainable from general smelting sources.

FLAT ▼ TOP is smooth. No gates or flash to hang on basket wires.

FLAT ▼ TOP'S tight keg prevents contamination from second hand containers. 250 lb. keg is easily stacked, rolled and trucked.

Yes, **FLAT ▼ TOP** *saves — in every way — yet is the SAME PRICE as troublesome ball anodes in fragile bags or battered drums. Sold by qualified metal finishing supply houses only.*

METAL FINISHING EQUIPMENT

Wagner BROTHERS INC.

POLISHING AND PLATING MATERIALS

431 Midland Avenue — Detroit 3, Michigan

tection afforded by red lead is much less affected by dilution with a thinner or by a presence of foots, a gelatinous impurity found in drying oils. Under some conditions, red lead affords protection even to steel exposed by scratches through the coating.

Paints capable of keeping steel passive will be useless, or sometimes worse than useless, if they are prevented from proper contact with the whole surface of the metal. Care must be taken not to shut in rust or moisture and to avoid applying paint to steel which has weathered for such a time that small gaps have appeared in the mill scale. Opinion is moving in favor of the complete removal of scale by sand blasting, or pickling before painting of metal surfaces.

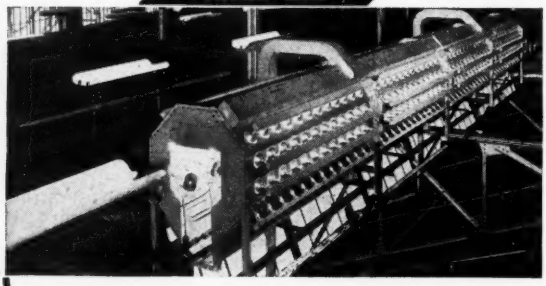
Synthetics

Polymerization is a term used by organic chemists to describe a chemical reaction in which two or more molecules of the same substance combine to form a compound containing the same elements in the same proportion but of a higher molecular weight. It is also applied to the union of like or unlike polyfunctional molecules.

This phenomenon is found extensively in connection with many modern organic finishing materials, usually termed synthetics. A resin, or combination of resins, plasticizers, and modifiers, is dissolved in proper solvents to produce a material suitable for the desired mode of application. If allowed to air dry only at ordinary room temperature, the resulting film will usually remain tacky and soft indefinitely, and entirely lacking in the desired properties. However, if the coated object is subjected to heat, conversion or polymerization of the film takes place to produce many admirable characteristics.

While polymerization may take place slowly at ordinary temperatures or by

HALL Radiair INFRA-RED OVENS



One of several similar ovens at Harrison Radiator, Buffalo, N. Y., for water dryoff and paint bake.

COMPLETE OVEN ENCLOSURE: Air recirculation makes fullest use of both radiant and derived heat.
PREFABRICATED PANEL CONSTRUCTION: Makes for low installation cost—minimum maintenance upkeep.
VITAL PARTS OUTSIDE HEAT ZONE: Accessibility permits fast, easy, safe servicing without interrupting oven operation.
POSITIVE VENTILATION CONTROL: Removes objectionable fumes and moisture from system — speeds drying. Equalized over-all oven temperature insures uniform, high quality baking results.

Write for Further Information

C. M. HALL LAMP CO., 1037 E. HANCOCK DETROIT 7, MICH.

Portable and Stationary Air Compressor Outfits

Spray Guns

Standard Floor Type Dry Spray Booths

Pressure Feed Paint Tanks

M & E

MODERN EQUIPMENT
Paint Spray Finishing Systems

Let M & E's complete finishing service for every finishing problem show you the way to greater profits in 1948. M & E offers a complete line of modern equipment—designed to meet the ever growing needs of a progressive finishing industry.

Prompt shipment on most standard items — quick delivery on special equipment.

WRITE FOR INDUSTRIAL CATALOG

M&E MANUFACTURING CO.

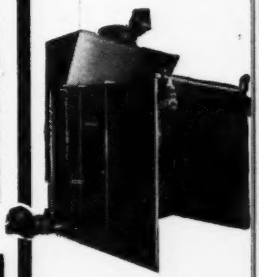
WINTHROP AVE. INDIANAPOLIS 5, IND.

Paint Spray Finishing Systems
Engineers and Designers

Barrel Circulating Pumps

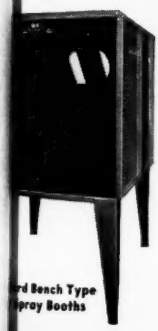
Air Cleaning Guns

and Water Extractors



Water Wash Spray Booths

Lacquer Units

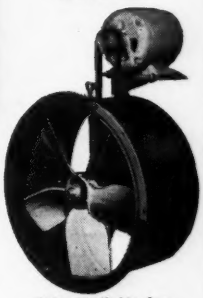


Bench Type Spray Booths

Standard Floor and Bench Type Turn Tables

Air and Material Regulators

Air, Material Hose and Hose Connections



Exhaust Units for Spray Booths and Hazardous Locations

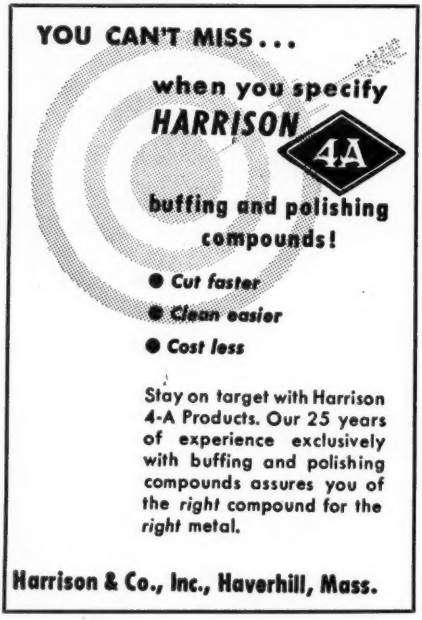
exposure to light, most polymerins must be raised above a critical temperature beyond which the reaction proceeds quite rapidly. In many cases, the properties developed are somewhat dependent upon the time which a given temperature is maintained. For this reason, it is important that the baking schedule recommended by the coating manufacturer be observed in the greatest detail.

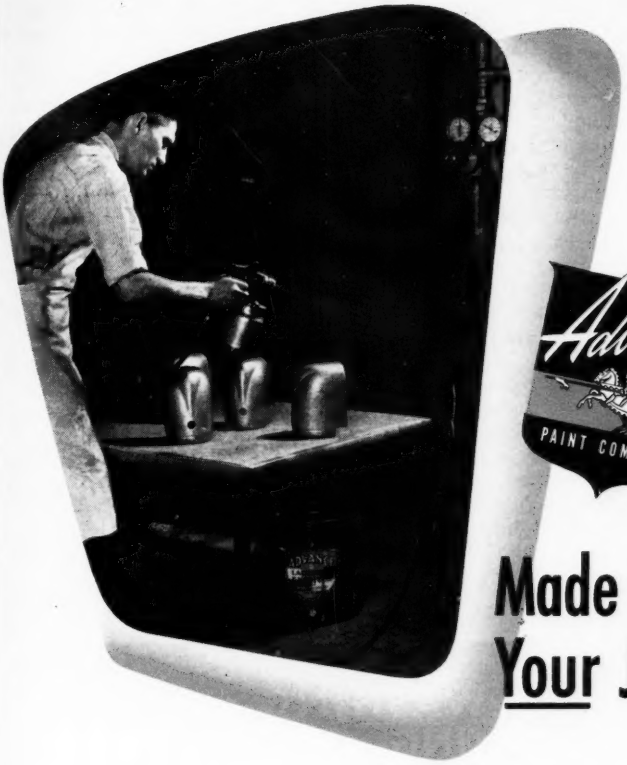
Among the important types of organic finishing materials which form films by polymerization are phenol formaldehydes, urea formaldehydes, alkyds, melamines, and many other synthetic resins. They may be used alone or in combination with compatible materials to obtain characteristic film properties.

The phenolics are produced with a wide range of characteristics which may be varied to suit a particular application. Their typical properties include excellent resistance to abrasion or wear, perspiration, alcohol, oils, sulphides, chrome tanned leather, heat, burning by cigars or cigarettes, humidity and salt spray. The adhesion is very good but the flexibility may be poor, particularly if a high baking temperature is used as it may lead to a brittle film. Where color retention is important as with a clear material, the phenolics are not generally as good as some of the other materials as they show a decided tendency to darken upon heating. They were used extensively for war material on such objects as steel cartridge cases and hardware for uniforms where wear and chemical resistance are highly important. Typical current uses for these materials include protective coatings for ash trays, buckles, pocketbook frames, suspender clasps, buttons, and numerous other products.

The urea and urea-alkyd materials offer many interesting possibilities, particularly in the clear materials where color retention is important, as they may be formulated to be quick baking and have very good initial color, color retention, adhesion, and flexibility. Their moisture and outdoor exposure, alkali, alcohol, sulphide, perspiration and burn resistance is good. Formulations are possible with excellent adhesion and flexibility suitable for strip or sheet which is subsequently formed or fabricated or for articles which are subject to appreciable bending or flexing. Door handles, drawer pulls, compacts, cigarette cases, flashlight cases, name plates, automotive and building hardware, lighting fixtures, clock cases, ornamental objects and giftware are often finished with urea base materials.

Synthetics are often produced wherein the polymerization of the resin has taken place before dissolving in the solvents, thus making possible coating materials of very desirable properties which can be dried by evaporation at ordinary temperatures or force-dried at elevated temperatures.


YOU CAN'T MISS . . .
when you specify
HARRISON
4-A
buffing and polishing
compounds!
● Cut faster
● Clean easier
● Cost less
Stay on target with Harrison 4-A Products. Our 25 years of experience exclusively with buffing and polishing compounds assures you of the right compound for the right metal.
Harrison & Co., Inc., Haverhill, Mass.



Advance PAINT COMPANY

Made for Your Job

Thousands of finish formulas have been developed by the Advance Paint Company to meet specific production needs in the industrial finishing field, and Advance can develop for you the exact finish your job requires.

No matter what you are building . . . washing machines, lathes, stokers, farm machinery . . . anything made of metal . . . Advance finishes are custom-formulated to your individual specifications. There is an Advance metal or wood finish for every industrial need, the result of a half-century devoted to the solution of industrial finishing problems.

Smooth flowing and quick-drying Advance finishes are adaptable to flexible production-line operation. Advance technicians will recommend the proper finish for your product.

Manufacturers of Industrial Finishes

Advance PAINT COMPANY
INDIANAPOLIS, INDIANA

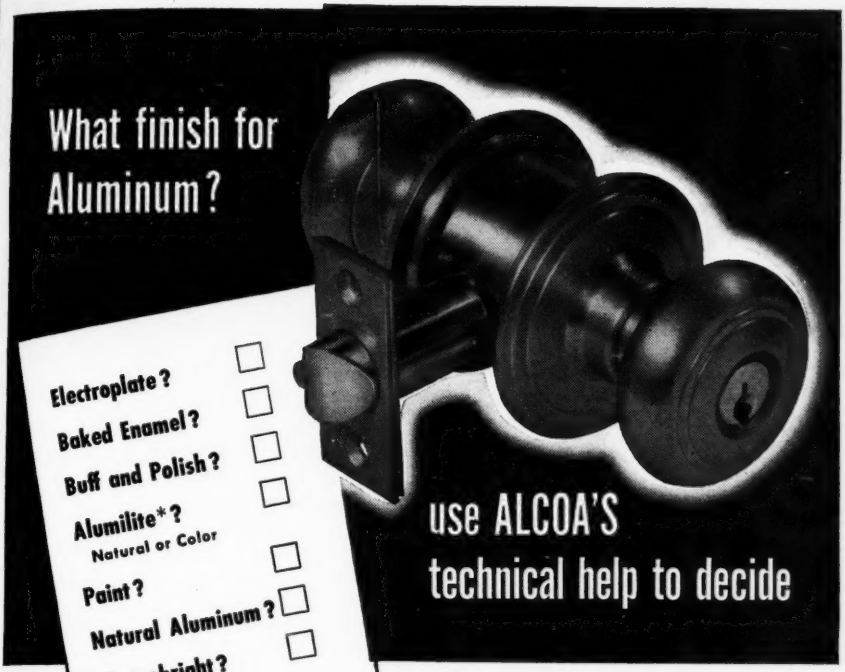
While a number of such materials are in common use, one of the most interesting of these is the vinyl group. This class of synthetic resins results from the polymerization or copolymerization of vinyl compounds, such as polyvinyl acetate, polyvinyl chloride, and polyvinyl butyrals. Vinyl resins, in general, are thermoplastic, odorless, tasteless, colorless, and noninflammable or slow burning.

Polyvinyl acetates are colorless, readily soluble resins, which are noted for their adhesive properties. They improve the gloss and adhesion of cellulose nitrate, cellulose acetopropionate and cellulose acetobutyrate lacquers and improve the heat-sealing qualities and oil resistance of paper coatings. Modifications of these resins yield flexible, oil resistant coatings, and are also used as thermoplastic adhesives to provide bonds that are tough and impact resistant.

Copolymers of vinyl chloride and vinyl acetate are widely used in surface coating applications where they yield finishes of good toughness, gloss, adhesion, and chemical resistance. These thermoplastic resins are unaffected by mineral acids and alkalis, oxidizing agents, alcohols, aliphatic hydrocarbons, and water, while they are swelled or dissolved by organic solvents such as ketones, esters, and aromatic and chlorinated hydrocarbons. They are incompatible with most other resins and drying oils but may be readily modified with plasticizers to provide almost any degree of flexibility desired. Principal applications for these materials include linings for metal and paper containers for food, beverages, and chemicals; chemical-resistant coatings; metal decorating finishes; high gloss, heat-sealing paper coatings; and long life, flexible, waterproof cloth coatings.

Polyvinyl chloride is a hard, tough resin with excellent chemical resis-

For
DEGREASING • WASHING • RINSING
PICKLING and DRYING of METAL PARTS
DEGREASERS
PICKLERS
Standard and Special Types of equipment from the smallest to the largest sizes for a wide variety of metal degreasing, washing, cleaning, rinsing, pickling, drying and allied operations.
Send for illustrated bulletin
OPTIMUS EQUIPMENT CO.
ENGINEERS AND MANUFACTURERS
15 WATER STREET, MATAWAN, N. J.
WASHERS
DRYERS
OPTIMUS EQUIPMENT
FOR CLEANING · RINSING · DEGREASING · PICKLING AND DRYING OF METAL PARTS



Write for a free copy today.

Finish Alcoa Aluminum by any of the standard processes. Or give it the patented Alumilite or *Alrok finishes that only aluminum can take. Choose the finish that will give your product the best protection or the greatest sales appeal . . . aluminum can take the one you pick.

Equipment to finish aluminum is standard, and only minor adjustments and changes in techniques are necessary. Good platers and finishers quickly learn to work with aluminum.

If you have problems on finishing Alcoa Aluminum, write for a copy of the 64-page how-to-finish-it manual, "Finishes for Alcoa Aluminum". And if you have problems that aren't answered in the manual, tell us the questions . . . we'll find the answers. ALUMINUM COMPANY OF AMERICA, 621 Gulf Building, Pittsburgh 19, Pa. Sales offices in 54 leading cities.

*Produced by Patented Process

ALCOA ALUMINUM 1888 1948 60 YEARS OF SERVICE

tance. It possesses limited solubility in ketones, such as cyclohexanone and mesityl oxide, and is used in solution as lacquer and as waterproof coating for cloth. Polyvinyl butyrals have unusual clarity and toughness and are soluble in alcohols, glycol ethers, and esters. Plasticized polyvinyl butyral sheet is used as the interliner in high-test safety glass, while solutions are used as adhesives, wood and leather finishes, cloth coatings and shatter resistant coatings for window glass.

Vinyl copolymers have recently been introduced which, by proper compounding, afford excellent results as a protective coating where the highest type of chemical resistance is required. Lacquers based on this material air dry rapidly or may be force-dried at moderate temperatures. The films produced have good adherence to metal, wood, or concrete and are remarkably tough and flexible. Their resistance to mineral acids and alkalis, oils, gasoline, alcohols, moisture, and many corrosive organic chemicals is of a high order. Many protective coatings exist which have resistance to acids or to alkalis but one is seldom found which is resistant to both. Lacquers properly formulated from this new resin are unusual in that they have high resistance to both acids and alkalis. In actual service, excellent results are being obtained under conditions ranging from linings for acid rinse tanks to linings for tank cars transporting concentrated caustic and from use on aluminum castings subject to hot ethylene glycol to protection of other materials from grease.

Summary

Various types of protective organic coatings have been discussed and classified by the method by which the film is formed from the liquid material; lacquers by evaporation; oil paints and varnishes by oxidation; and synthetics by polymerization. The polymerization may take place during the formation of the film or may have been accomplished before dissolving the resin.

Each type of material has its best field of application. Hence, we must give consideration to the results desired, the conditions of service, the method of application, and the limitations of the material in selecting a coating for any particular purpose.

"Selecting the Right Type of Steam Trap" is the title of a four-page two-color bulletin issued by the Sarco Co., Inc., Empire State Bldg., New York 1, N. Y. The bulletin includes an illustrated chart which permits the reader to select, at a glance, the proper type of steam trap for his particular application. Special features and advantages of and recommendations for each type of trap are listed. Large cross-sectional illustrations facilitate following of the text.

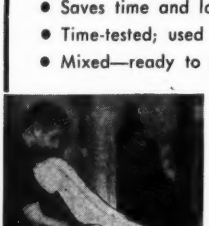
Copy of Bulletin No. 1600 is available free to engineers or production men buying, specifying, or recommending steam traps.

BOOTHCOTE

cleans spray booths quickly, economically, safely!

Spray Boothcote on clean booth. Surplus paint can then be peeled off in sheets by any operator.

- Saves time and labor
- Time-tested; used for 8 years
- Mixed—ready to use
- Can be brushed or sprayed
- Non-inflammable; safe to store
- Does not flake off



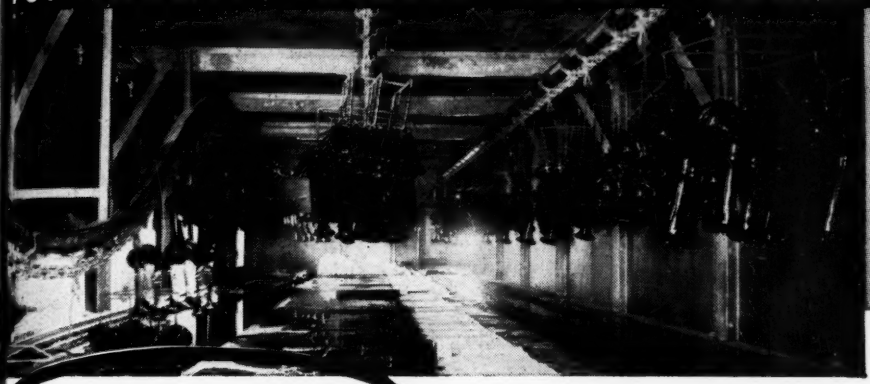
Money back trial offer: 15 gals. $16.50 f.o.b. Buffalo or write for Circular.

HYGRADE FOOD PRODUCTS CORP.

Boothcote Div., 19 Stetson St., Buffalo 6, N. Y.

SYSTEMS

for ENAMEL • LACQUER • PAINT • VARNISH



FINISHING SYSTEM INSTALLED AND IN OPERATION, WHILE EXPANSION CONSTRUCTION LAGS DUE TO MATERIAL SHORTAGES

...y Mfg. Division of The Electric Auto-Lite Co... ...ew finish... ...ad plating equipment was ne...ary, ...ut plant space was not available to house the ...ew equipment. Plant expansion construction, ...lready under way, was delayed due to material ...hortages. The Mahon organization designed and ...nstalled a complete dip enamel finishing system ...djacent to existing manufacturing buildings, and ...oused it in—the housing becoming an integral ...art of the system. It is so designed as to remain ...ntact when new construction is completed—the ...resent housing will become the finishing room enclosure in the new building. This finishing system is very compact, and consists of a six stage metal cleaning and rust proofing machine, a dry-off oven, a dip tank and drip enclosure, baking oven and conveyor—all controlled from one panel-board which groups all control switches, safety devices and recording instruments. If you are confronted with a finishing problem, at the present time, or are contemplating new finishing equipment in the near future, call on Mahon now . . . twenty-seven years of experience, constant research and pioneering development, in this highly specialized field, have endowed Mahon engineers with a wealth of technical knowledge and practical know-how not available to you elsewhere. See Mahon Insert in Sweet's Mechanical Industries File for complete information.

THE R. C. MAHON COMPANY

HOME OFFICE and PLANT, Detroit 11, Mich. . WESTERN SALES DIVISION, Chicago 4, Ill.

Engineers and Manufacturers of Complete Finishing Systems including: Metal Cleaning Machines, Rust Proofing Machines, Dry-off Ovens, Hydro-Filter Spray Booths, Filtered Air Supply Units, and Drying and Baking Ovens. Also Paint Sludge Reclaiming Units, Hydro-Foam Dust Collectors, and many other Units of Special Production Equipment.

AHON

Barrel Finishing of Metal Products

Part 19—The Use of Wood Lined Barrels for Abrasive Operation and the Relation of Barrel Size to Size of Parts To Be Processed

By H. LEROY BEAVER
Barrel Finishing Consultant
Lansdale, Pennsylvania

"WHAT is the theory that lies behind or prompts the use of wood liners in barrels used with abrasive materials in the barrel finishing of metal products?" That is the substance of question after question that has been asked periodically during the past five years.

Of almost equal recurring frequency is another question: "In processing large parts in barrels, is there any factor in the mechanics of the barrel finishing operation that governs the relation of the size of the barrel to the size of the parts to be processed?"

From our limited knowledge of barrel finishing procedure we would judge that the above two questions complement each other and should be discussed in their relation to each other. We will attempt to do this with the hope that our exposition will be sufficiently clear to answer all questions that have been asked along these lines.

It has only been within the past five or six years that we have seen this revival of the use of fractured minerals or pebbles of one form or another as applied to the barrel finishing of metal products. If we will recall that steel balls and steel barrel finishing materials did not come into use in this country much before 1901 and that we did have some applications of barrel finishing prior to that time wherein sand, cinders, iron furnace slag, various forms of "gravel," pebbles, and various minerals—just about everything embraced in Mohs' Scale of Mineral Hardness short of the diamond itself—were used.

As to the use of abrasives against wood, we, of course, should discount the use of second hand whiskey barrels, wine casks, molasses barrels and the like for they can only be regarded as incidentals, and we have no record of any of such instrumentalities ever having gained even casual popularity in the barrel finishing scheme of things. We suppose that down through the past thirty odd years of this research we have done just about everything short of excavating and blasting in an effort to trace down the earlier practices and to try to fit them into present-day procedure. In all of this

Reynolds Research is the beginning of cleaner, more uniform colors . . . in polychrome metal lustres, hammer effects and other novelty finishes.

Clean, brilliant polychrome finishes, with uniform "flop," depend on the character and quality of the aluminum pigment used. Reynolds Research has developed exclusive processes that assure maximum purity and permit close control of aluminum particle sizes. These can be kept uniform within any specified range . . . thus assuring clean colors and side-stepping the usual seeding troubles.

In addition, Reynolds Aluminum Pigments are supplied already de-leafed . . . without alteration of particle shape or structure . . . in a thinner that permits easy, uniform dispersion, without grinding, in synthetic or lacquer finishes.

Reynolds works closely with leading finish manufacturers in their formulations . . . and the full facilities of the Reynolds Laboratories are at their disposal for independent or collaborative research. This research is constantly developing improvements and economies in the production of all types of finishes.

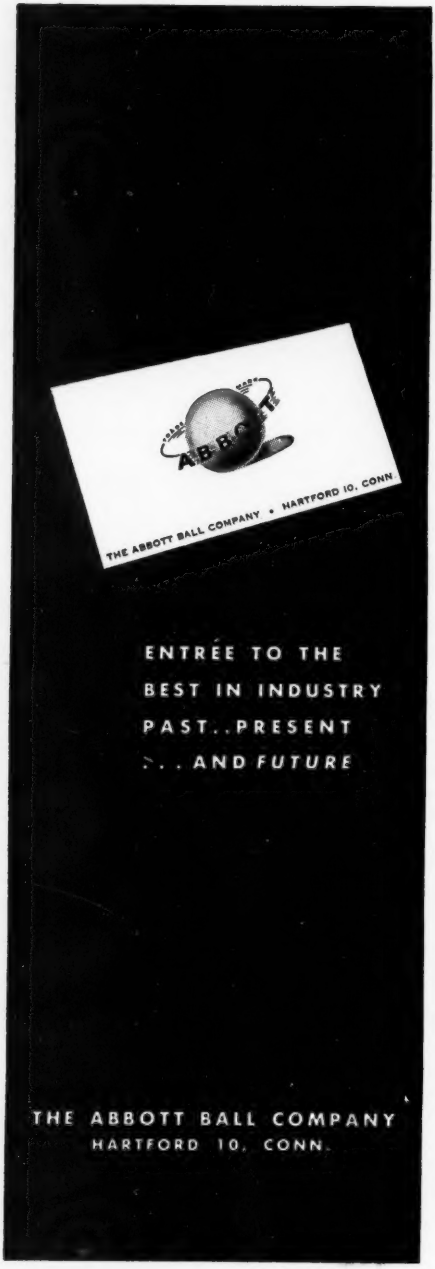
Users of metallic finishes will find it pays to check back on the aluminum pigment source. If it's Reynolds Pigment, it's the foundation of the finest finishes.
Reynolds Metals Company, Pigment Div., 19 East 47th Street, New York 17, N. Y.

FOR COATINGS OF...

REYNOLDS ALUMINUM PIGMENTS

REYNOLDS METALS

LIQUID ALUMINUM



search we have record of only one barrel used with abrasive material that had a wood liner, and this barrel was in the warehouse of the E. J. Woodison Company, well known for many years in the foundry supply field in the Eastern Pennyslvania area. This has been at least twenty-five years ago. The barrel was not in operation and we could have purchased it for a most reasonable figure, but somehow it just did not seem to fit in with our own research plans. The barrel shell itself was of steel, but the wood liner instead of being composed of flat board sections was composed of shaped blocks fitted into the barrel shell with the end grain exposed; in other words, wood blocks stood on end to form a liner. In size it was roughly 24 x 36 inches and was mounted over a sort of trough. In operation a constant stream of running water passed through the barrel to wash out the sludge as rapidly as it was formed. The grinding or abrasive medium was simply bituminous coal clinkers or cinders. We did not see any castings that had been operated in this type of barrel, but had it been thoroughly practicable no doubt such barrels would have been manufactured and used widely. Quite to the contrary, however, we do not find them until the period of this current renaissance.

We have never discussed this question with any supplier of wood lined abrasive or cutting down barrels, but we might assume that there are two reasons why such liners are used. First, it might be felt that wood liners would save wear on the metal barrel shell and obviate the necessity for its periodic replacement, but this is open to some doubt because we know that one shell will generally wear out three or four sets of end plates, and we have never heard any complaints of excessive costs of barrel shell replacement. The second and most likely reason is to prevent the marring of large parts

CLINCO

CLINCO

CLINCO

The CLINTON COMPANY

1210 ELSTON AVENUE • CHICAGO 22 • ILLINOIS

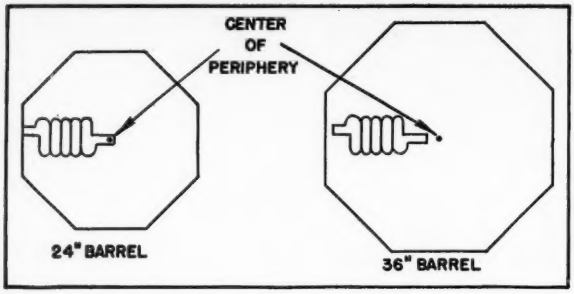


Fig. 1—Cross section of two barrels, showing relationship of size and position of part to be burnished to barrel

when they come into impact contact with the inner periphery of the barrel.

If it is the latter reason, and we strongly suspect that it is, then the question involves an understanding of the underlying theory of the application of the mechanics of the barrel finishing operation and it has to do with the relation of the size of the part to be finished to that of the finishing barrel used.

You will recall that only a couple of months ago we explained how, in a well understood operation of a barrel, that parts in process could be described as being centrally suspended in the burnishing mass at a point equidistant between the center of the axis of the barrel and the periphery of the barrel; that in this position, which was determined by the speed of the barrel, the parts travelled in an orbit around the center of the axis of the barrel. Not only that, but that such parts also revolved around their own axis and always under the pressure of the finishing mass. Now this simply means that if a part is placed in the mass in a given position, it must have room to revolve around its own axis as well as in its own orbit without contacting other parts or the sides of the barrel itself. This it definitely cannot do unless the diameter of the barrel is such that these dual movements may be completely accomplished.

Let us try to picture this for you with two small diagrams, as shown in Fig. 1. These diagrams represent octagonal barrel shells of 24-inch diameter or rather 24 inches across faces, and 36-inch diameter or 36 inches across faces. The parts on which we desire to remove surface area and obtain a smooth barreled finish by means of a weight-carrying medium plus abrasives are 9 x 12 inches in size. The smaller dimension we ignore because the larger is the controlling factor and in this case the greater dimension, 12 inches, must have some additional leeway in which to revolve around its own axis at least 3 inches from either end. This would require a space of 18 inches

FELT DOES IT BETTER

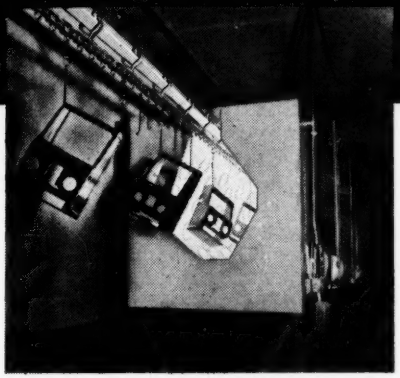
Paramount Brand

FELT WHEELS
Superior for Polishing and Buffing
When you order FELT WHEELS specify
PARAMOUNT BRAND FELT WHEELS
for top quality and uniformity.
BACON FELT CO. WINCHESTER, MASS.
Established 1824
"America's Oldest Felt Manufacturer"

PRODUCTION *Doubled*

On Paint Baked Parts at R. C. Allen Business Machines, Inc.

By JENSEN Infra-Red Oven



R. C. ALLEN adding machines and cash registers have outstanding eye-appeal. Their cases are paint baked by Jensen infra-red.

After receiving their regular high-gloss black-enamel finish, a special *satin* finish is applied to indentations on top and side. The objective is to get an *even* pattern and a good, durable bake. Jensen infra-red does the job perfectly. Here's why:

1 JENSEN "DUAL HEAT"—an exclusive Jensen engineering feature that *combines* convection heat with radiant energy.

2 JENSEN "NESTED LAMPS"—an exclusive Jensen development that prevents overbaking certain areas while underbaking others.

Special Offer

AND HERE IS THE PAY-OFF: Mr. Roy J. Charters, R. C. Allen plant superintendent reports: "The Jensen infra-red oven has increased our production on these parts approximately 200%!"

Without cost or obligation, we will run laboratory tests on your products, using your finishes. All parts will be returned for your inspection. Act today!

JENSEN SPECIALTIES, Inc. **JENSEN** 9331 FREELAND DETROIT 28, MICH.

DESIGNERS and BUILDERS of "DUAL HEAT" INFRA-RED OVENS • CONVEYORS • PAINT DIP TANKS

on each side of the center of the barrel or a total of 36 inches.

If this simple rule is disregarded and the size of the part to be processed is such that its overall length in the barrel extends from the periphery beyond and over the center of the axis of the barrel, then what happens is that in operation the part is carried through the mass until it emerges, as it always will, considering that barrels are never completely filled. In so doing too much of its length will extend above the surface of the mass, thus causing the part itself to topple over and make impact contact with the side of the barrel and produce unwanted flats, unless a wood liner is inserted in the barrel to absorb such impact contacts. If by chance you read this and are operating a barrel for the finishing of large sized parts, place your ear as close as is safe to the outer shell of the barrel. Listen carefully and if you hear an intermittent succession of "bumps" or "thumps," caused by impact of the part in process with the inner periphery of the barrel, then you will know that one of two things and perhaps both are occurring; first, too small a diameter of barrel to accommodate the part in process, or in lieu of that, too high a barrel speed. Remember, it is the speed of the barrel that develops the centrifugal force that determines the orbit of travel of the part in process. If it is a case of too high barrel speed, slowing down the barrel to the point where the "bumps" or "thumps" disappear will effect a cure, but if that does not suffice then it would be clear that the barrel is too small across faces to accommodate the size of parts sought to be processed.

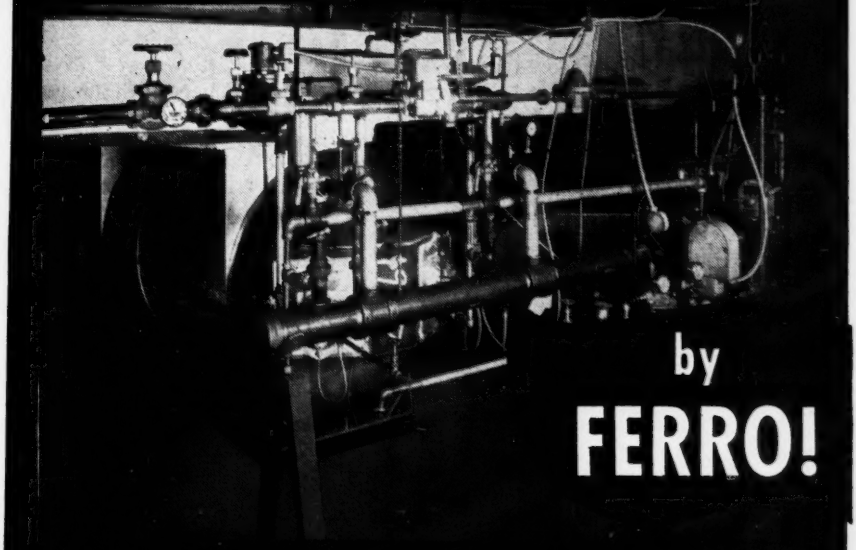
What we have said regarding clearance between the center of the axis of the barrel and its inner periphery must also be said of space for the operation of the part laterally. We can definitely locate the part in process in the barrel radially by regulating the speed of the barrel, but over lateral displacement along the line of the center of the axis of the barrel we have positively no control. Therefore, if a barrel is too long, then separator plates should be installed at suitable intervals but wide enough apart to provide for at least three inches of lateral movement at each end of the part to be processed.

The simple matter of operating the barrel on an absolutely level plane is also important because the least deviation from a true level will have a tendency to cause the parts in process to creep toward the high side of the barrel which has the least pressure resistance to the parts seeking to pass through the finishing materials.

In your abrasive barreling operations you might use steel materials, naturally-formed or tumble-formed pebbles, fragmented minerals of various sorts or artificially-created abrasive materials either in fractured or pebble form, or what are sometimes

HOLLAND SAYS:
START SAVING
BY INCREASING
PRODUCTION
Spray Booth — Leg and Floor Type. Available in all sizes.
Write for FREE folder "M" showing our wide selection of metal finishing equipment.
J. HOLLAND & SONS, INC.
MANUFACTURERS • DEALERS
276 SOUTH NINTH ST. • BROOKLYN, N. Y.

Another DRIER Job



by

FERRO!

At American Stove, synthetic enamels (delicate pastels and whites) are now being dried by direct oil firing—*with no loss of color characteristics*. To do this job, Ferro engineers had to design a new "head" for original heaters, install a new dual-fuel (gas and oil) burner and devise a new application of "safety control" for oil firing.

This is another example of how years of research, design engineering and construction experience enable Ferro to assume undivided responsibility for ovens, driers and complete finishing systems.

referred to as tumbled abrasives. Generally speaking these mineral forms could all come under the general classification of "pebbles" because even the fractured forms are gradually reduced to pebble forms by reason of the wearing away of their initial sharp cutting edges as they are operated in the barrel. Our personal choice would be to start with fractured materials to take full advantage of their initial cutting edges since even in this wearing away of edges small particles are separated from the initial chips and they serve their part in the operation of the process; then as the load is reduced by the grinding away of the material, to add additional fragmented material to bring the barrel to proper load so that there will be a continuous flow of new cutting edges introduced into the burnishing barrel.

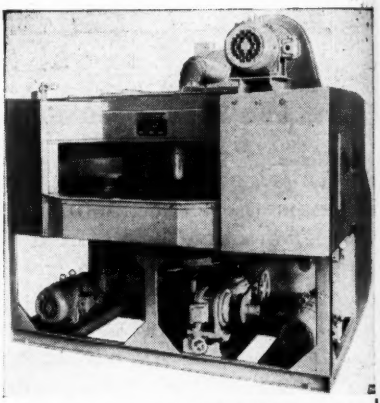
Most manufacturers using barrel finishing procedure in their production as well as most of our barrel operators well know that, of the three prevailing types of barrels in use in American industry, namely, the oblique tilting type, the long and narrow type, and the high and narrow type, all of these barrels are comparatively small in size because they were designed specifically for use with steel barrel finishing materials which can be restricted to a comparatively small space.

Quite aside from barrels in the above categories we also have barrels especially designed for use with pebbles or fragmented minerals and they are quite generally known in industry as ball mills or pebble mills. The main application of the conventional pebble mill has been the grinding or pulverizing of a wide variety of materials such as paint pigments, drug products, clays and the like, using flint pebbles or the average Danish or French type of pebbles as well as porcelain balls. The underlying principle of operation using these materials would be the same if metal parts were added to the load of pebbles together with a suitable pro-

Equipment for EFFICIENT METAL WASHING AND DRYING

METALWASH Equipment is specifically designed and built for rapid, efficient cleaning and drying of metal parts.

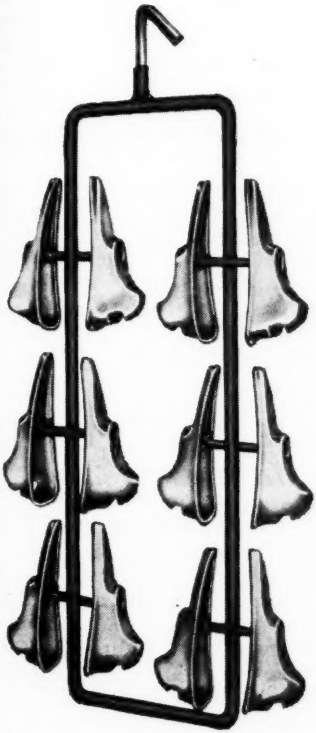
We manufacture a complete line of all sizes and types of standard and special metal cleaning, drying and pickling equipment, engineered to fit your production needs. Write for further information.



One-man operated ROTO TABLE wash, rinse and dry machine for all types of metal and machined parts — occupies minimum floor space—designed for rapid cleaning with minimum handling.

METALWASH MACHINERY CO.
149 - 155 SHAW AVENUE IRVINGTON 11, NEW JERSEY

New Rack Insulation



No. 1000 is excellent insulation for racks and fixtures used in electroplating, anodizing, electro polishing, phosphate coatings and electro forming.

100% Solids

BUNATOL No. 1000 Paste Insulation is all solids. No inflammable liquids. No evaporation. No loss.

A single dipped coat gives a very thick and extremely tough insulation which far outwears ordinary types of insulation and at less cost.

Paste Insulation can be used successfully by anyone in any shop and with a great saving in labor. Simple to handle and quick;—insulation job completed in less than two hours. If you have an oven to bake racks you can save money and increase production with No. 1000 Paste Insulation. Write for information.

Nelson J. Quinn Company

Toledo 7, Ohio

BUNATOL

portion of abrasive materials and a suitable agent to hold such abrasive materials in suspension.

When we are seeking information regarding phases of barrel finishing with which we are not familiar, and we might add that no one person will ever be able to master all the details and the practices, we turn to those who by long experience and accurate knowledge have earned the right to speak with authority, and in this instance we refer to Mr. H. F. Kleinfeldt, Executive Vice President, The Abbe Engineering Company, 50 Church Street, New York City. Mr. Kleinfeldt states in Abbe Catalog No. 55:

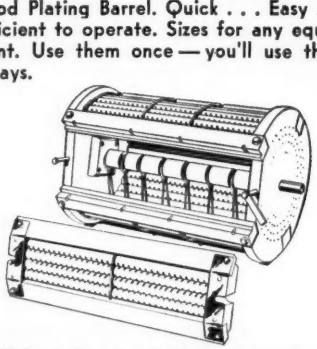
"A steel ball mill with the same total volume as a pebble mill will grind the material to the desired fineness in less time because its grinding efficiency depends upon the weight of the charge of grinding medium as well as the size of the grinding medium. Since steel balls weigh approximately three times as much as flint pebbles, they can be smaller in size to produce the same results, thus increasing the number of balls in a mill as compared with pebbles, and thereby considerably increasing the grinding efficiency because of the greater number of contacts."

This would seem to indicate that in order to obtain pressures equivalent to those obtained with the use of steel materials, a typical ball mill should have at least three times the load-space area as barrels operated with steel materials. Not only is the question of size of barrel proportioned to the character of the material used fully covered, in Abbe Catalog No. 55, but also the various types of lining material used to prevent wear of the steel barrel shells. These liners are for the most part Buhrstone (silex) or porcelain production.

There is one other matter on which we should touch before concluding this discussion. We have had reports from quite a few barrel operators who have tried to use crushed minerals or pebbles of one kind or another in their conventional wood-lined burnishing barrels for cutting down operations and who now want to know whether they could not wash out the abrasive materials and use the same barrels for bright burnishing with polished steel materials and soap-water lubricants. The answer is "No;" for once abrasive materials are operated in a wood lined barrel the wood becomes so impregnated with fine abrasive materials, which also filter through cracks or crevices in the liner and lodge between the liner and the barrel shell and continually seep back into the burnishing area, that bright finishes cannot be obtained again. The only thing that can be done in such cases is to remove the liner, carefully scrub the barrel shell and end plates, and insert a new liner.

Quite contrary to the opinion that some of our readers seem to hold, we

IMPROVED
King Plating Barrels
For Dependable . . . Economical Service
You can eliminate high maintenance costs and save money with the NEW King Hardwood Plating Barrel. Quick . . . Easy . . . Efficient to operate. Sizes for any equipment. Use them once — you'll use them always.

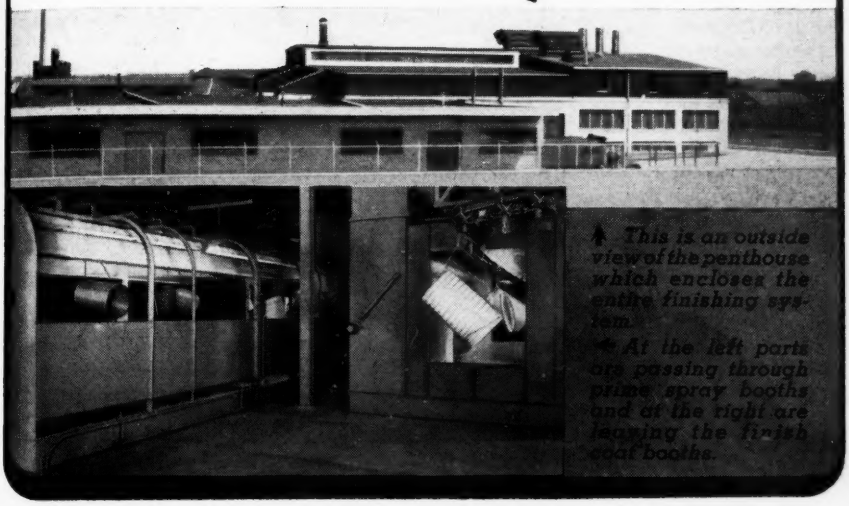


Write today for further information.
JOHN KING
48 SPRINGFIELD ST. DAYTON, OHIO

NEWCOMB-DETROIT

Engineers — Builds — Installs

PAINT FINISHING SYSTEM IN A PENTHOUSE! . . . . . .



↑ *This is an outside view of the penthouse which encloses the entire finishing system.*

← *At the left parts are passing through prime spray booths and at the right are leaving the finish coat booths.*

TO FINISH FAMOUS *Deepfreeze* HOME FREEZERS

To save valuable plant area at Motor Products Corporation's Deepfreeze Division where the famous Deepfreeze Home Freezers are made, Newcomb-Detroit installed the entire finishing system on the roof of the plant. The system includes a spray bonderite system, dry off oven, prime and finish coat booths, prime and finish coat ovens, and an air supply system to distribute conditioned air to the booths and ovens. The entire system is connected by conveyors to the production departments below.

This is but one of the many efficient, economical installations designed, built and installed by Newcomb-Detroit during the past 35 years. Use this experience to solve *your* finishing problem.

Established 1912

NEWCOMB-DETROIT COMPANY

Grand Rapids Division
GRAND RAPIDS, MICH.

Main Office and Plant
5741 Russell Street
DETROIT 11, MICHIGAN

Western Sales Office
CHICAGO, Ill.

have no objection whatever to the use of pebbles or fragmented materials in any usable and adequate form, for there are many operations where they serve efficiently and economically, but we are quite firmly of the opinion that pebbles should be operated in a pebble mill where pressures can be obtained that will be at least reasonably comparable to those obtained in the smaller units using the heavier steel materials. Indeed, you will find us in favor of any operation embracing a revolving barrel loaded with some manner of material, either for the removal of surface area or for bright finishing, that will provide for the mass production finishing of metal products at the lowest possible unit of production cost.

Binks Catalog No. 96. A 122-page reference catalog issued by the Binks Manufacturing Co., 3118-40 Carroll Ave., Chicago 12, Ill., describes the company's line of industrial spray finishing equipment. The catalog is organized for easy reference, showing several setups available for each of the various products or groups of products. A nozzle selection chart for air and material nozzles is included. Prominent in the catalog is a section on lightweight and heavy duty production spray guns, together with the necessary equipment for pressure tank, gravity, or circulating systems. Oil and water extraction apparatus, together with pressure regulators and gages, air and material hose, and all other necessary accessories, is also described. In addition, various air compressor units, exhaust fans, spray booths, and complete spray painting units are described in detail. Copy of Catalog No. 96 free upon request.

"Platecoil for Tank Heating," a four-page bulletin published by Kold-Hold Manufacturing Co., Lansing 4, Mich., describes the tank heating equipment manufactured by this firm. The bulletin provides data on the types and sizes of Platecoil heaters available, together with illustrations showing typical installations. Copy free upon request.

AND THESE ARE ONLY A FEW OF BINKS STANDARD ITEMS

BE FRESH . . . STAY FRESH!

on

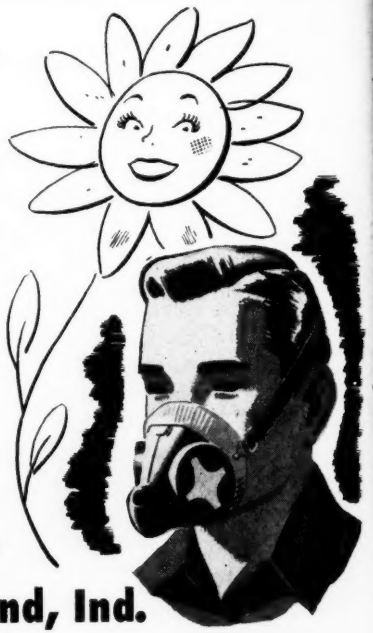
Paint Spray Jobs

wear a DUPOR No. 4

The favorite paint spray respirator! Rubber face mask provides air-tight fit over nose and mouth. Twin filters keep aggravating fumes, gases, vapors out of lungs. Also wear as protection against sawdust, silica dust, grinding compounds.

COVER'S GAS-TIGHT FOG-PROOF GOGGLES $1.65

Sample sent $1.65 *pp*



H. S. COVER, South Bend, Ind.

AND THESE ARE ONLY A FEW OF BINKS STANDARD ITEMS

36 STANDARD SPRAY GUNS

ranging from small touch-up guns to master production guns such as the new Model 18.

1050 NOZZLE COMBINATIONS

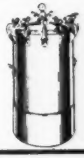
— a setup for every type of material and job, from ceramics to house paint, lacquers, asphaltum.

7 OIL & WATER EXTRACTORS

ranging in size from small one-gun models to the Model E75 which handles 75 cu. ft. of air per min.

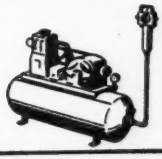
83 STANDARD MATERIAL TANKS

from 2-gallon to 60-gallon tanks with automatic agitators. Also Herculoid tanks for ceramics.



24 STANDARD COMPRESSORS

a complete range from compact ¼ HP portable outfits to powerful 10 HP models for heavy use.



510 STANDARD SPRAY BOOTHS

from 3'-6" dry bench types to huge Dynaprecipitor Units which thoroughly wash exhaust air.

12 TYPES OF HOSE

for air and material, ranging from small ¼" sizes to heavy duty ¾" hose for production use.

Send now for your free copy of our new No. 97 Catalog-Data Book. See for yourself the completeness of the Binks Line. Request your copy on your company letterhead.

Abrasion Testing of Anodized Coatings

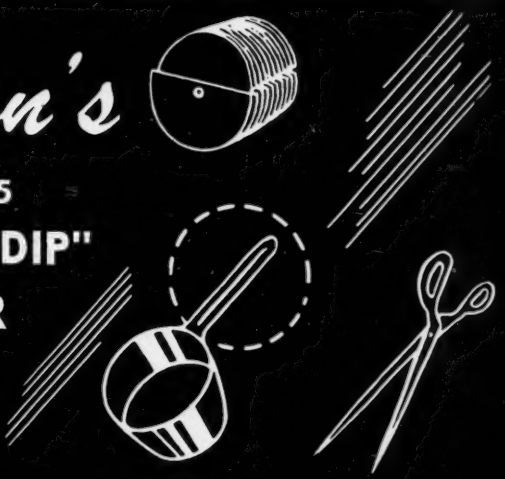
By ARTHUR P. SCHULZE

THE application of electrolytic and chemical oxidizing surface treatments to aluminum, magnesium, and their alloys has spread in scope with remarkable rapidity in recent years, due to the fact these "conditioners" provide an important contribution to the effective corrosion resistance and painting of these two versatile, lightweight metals. That the values of these particular surface-finishing processes and practices are now widely recognized and increasingly utilized becomes quickly apparent when one realizes the present availability of numerous methods and materials that, by producing beneficial and attractive effects on both aluminum and magnesium, increase corrosion resistance and facilitate final finishing of each.

Since the majority of these surface treatments already have been discussed in detail by PRODUCTS FINISHING and other leading technical journals, there is no additional need to further examine these techniques at this time. Instead, attention is focused here on a hitherto little-publicized yet vitally essential phase of this form of product finishing.

Testing surface finishes of all types for maximum resistance to normal abrasive wear is a comparatively simple laboratory research operation. Following proper specimen preparation and wheel refacing, coated test panel and holder are mounted on driving shaft of wear machine as illustrated herein. Abrading wheels are then carefully lowered into testing position, and the test is started, continuing until end point is reached; that is, the total number of "wear cycles" required for abrasion to mar appearance or impair serviceability of the particular type surface finish under examination.

Dolan's



No. 885
"WATER-DIP"
CLEAR

New and Different

A protective synthetic coating for all types of PLATED surfaces. Four outstanding features ---

ECONOMICAL IN APPLICATION
PREVENTS OXIDATION and FINGER PRINTING
AIR DRIES IN TWO or THREE MINUTES
IMPARTS LUSTROUS FINISH

V. J. Dolan & COMPANY, Inc.

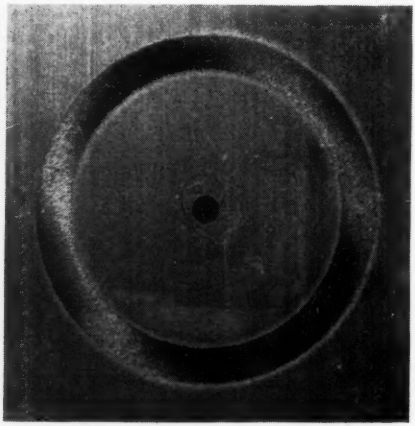
Manufacturers of

"Unquestionable Quality"
INDUSTRIAL FINISHES

Synthetic Enamels, Primers, Clear and
Pigmented Lacquers, Thinners, Specialty Finishes

1830 N. Laramie Ave. Chicago 39, Ill.

Not so generally known among finishing department superintendents and shop foremen is the basically important influence of laboratory research testing techniques, particularly abrasion-resistance measurement methods, on the development and improvement of anodic coatings. Neither so widely recognized and appreciated by many finishing executives is the corollary that wear analyses and



Illustrated herewith is an abrasion-tested sample of anodized aluminum. Note how the hard oxidized surface has been worn through to the base metal, revealing the soft interior.

other test routines have a definite, direct bearing on the establishment and maintenance of quality control in the application of these surface finishes. Accumulated plant experience vividly demonstrates the validity of these particular assertions.

Various examples could be cited to illustrate clearly and underscore for emphasis the irrefutable fact that research testing in general, and abrasion-resistance analysis in particular, ranks high on the list of key contributors to more efficient chemical or electrochemical surface oxidizing of aluminum and magnesium and to the continued improvement of film strength. But chiefly because of space limitations, however, only one particular instance is singled out. Yet it proves genuinely representative and highly revealing. This case record concerns the wartime experience of a major aircraft producer.

Seeking an anodic coating process for magnesium alloys that would provide proper insulation and high resistance to corrosion and abrasion, research chemists of this concern launched an extensive investigation of standard chemical treatments and subjected them to a number of tests. With the discovery that the ability of these finishes to inhibit corrosion and resist abrasion and mechanical injury of the base metal left much to be desired, research efforts were then shifted to the development of a more effective electrochemical process. Subsequently, it was achieved and soon became the subject of several discussions in the nation's technical press.

In the course of this extensive search, considerable testing was done to determine and compare, among other properties, the corrosion resistance and abrasion resistance qualities of the new finish against similar features of coatings obtained through the use of the standard methods scrutinized. To check wearability of the newly-developed coatings, obtainable with either alternating or direct current, the Taber Abraser was employed. The instrument was equipped with CS-17F type abrasive-embedded Calibrase wheels, ordinarily recommended for testing metallic coatings, operated under 1,000-gram wheel pressure. It was found in most instances that chrome-pickle and acid-dichromate finishes failed following a few wear-cycles, while the new coatings withstood more then 1,000 wear-revolutions without breaking down.

To check the accuracy of these findings, another group of specimens were

GENERAL ELECTRIC DEPENDS ON IT!

ONE OF THE many large manufacturers throughout the country that relies upon CINCINNATI cleaning and finishing methods, the General Electric plant at Erie, Pennsylvania, has found the solution to what was once a problem.

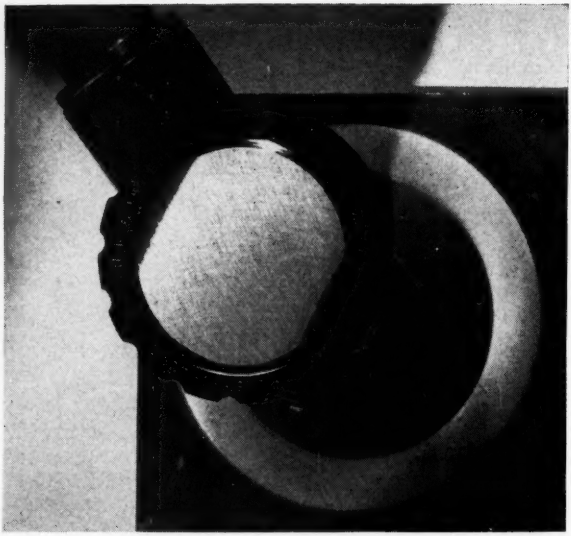
CINCINNATI satisfies their high output schedules. Performance data has proved that the low unit cost and the quick, effective operation spell satisfaction.

Whatever your metal cleaning problem, write CINCINNATI today. One of our engineers will visit or write you. There's no obligation.

Cincinnati

CLEANING AND FINISHING MACHINERY COMPANY

IRONTON, OHIO



As seen through an illuminated magnifying glass, abrasion lines produced on anodic-coated, organic-finished or electroplated surfaces by dual rotative abrasive-embedded wheels take the form of two arcs, one criss-crossing the other, which cover a circular area of approximately 10 square centimeters. This is due to the fact that the Calibrase wheels, revolving in opposite directions through frictional contact with the specimen as it rotates on a motor-driven turntable, exert a combined abrasive, compressive, and twisting action twice in each revolution of the specimen holder.

given 10, 100 and 1,000 wear revolutions respectively, after which they were given an accelerated 24-hr. corrosion test. The test definitely and clearly established the point that 10 wear cycles on the chrome-pickle and acid-dichromate finishes exerted more damaging effects than 1,000 wear revolutions on either of the new a.c. or d.c. finishes.

From this illustration can be easily visualized the importance of qualitative and comparative abrasion-resistance analyses to product development and quality improvement research of surface finishes. As production quality control aids, they are becoming increasingly essential.

That surface wear testing of anodized coatings and other finishes can be performed easily and quickly today is due in no small degree to the development of precision-engineered abrading apparatus that not only accelerates thousands of times the rate of normal abrasive wear but in doing so, establishes a scientific wear rating which provides a standard value for gaging the wearability of surfaces so tested.

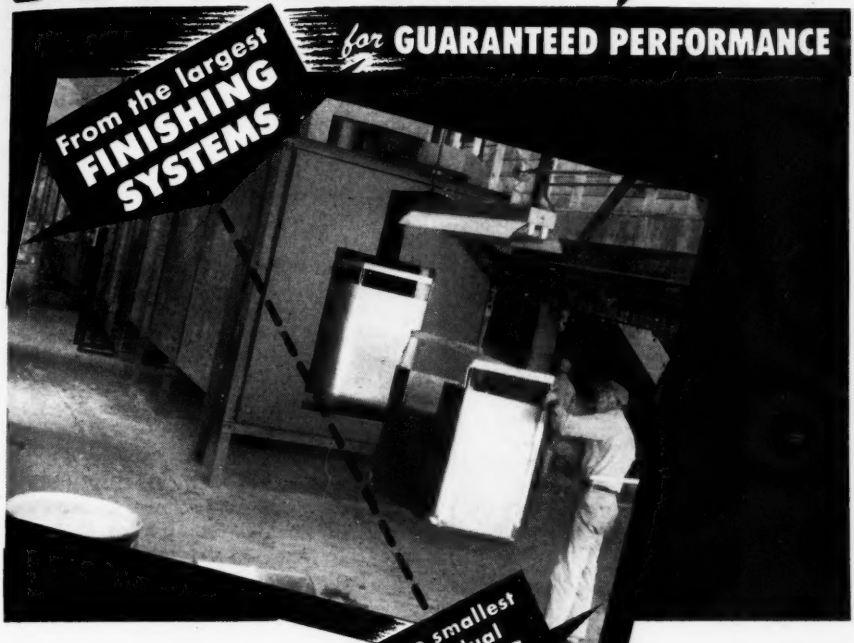
Not only from the standpoint of pure research is determining the abrasion-resistance factor of product finishes important. Today, due to intensified competition, expectancy of improved product performance or stepped-up serviceability, and greater urgency to maintain quality control of surface finish, this consideration takes on even greater significance. That is why certain other effects of abrasion-resistance measurement are particularly noteworthy.

One of the most important of these is the fact that abrasion testing tells manufacturers their competitive advantage. Product finishers in steadily increasing number, for example, are finding that where their product is superior from the standpoint of durability, an abrasion test gives them a distinct sales wedge of decided import. And where product improvements are indicated, such a test proves an instrumental aid to the research laboratory in developing the coating of higher quality wanted.

To purchasers, an abrasion test brings a practical, right-on-the-spot method for accurately judging the wear characteristic of a surface coat-

DESPATCH-*Engineered*

for GUARANTEED PERFORMANCE



To the smallest individual OVENS

FOR 45 YEARS, as specialists in providing ultra-modern finishing equipment, DESPATCH has maintained a fixed policy of *engineering every installation, regardless of its size, to identical high standards.*

This means that the smallest DESPATCH baking oven is planned, sized and selected for your job by the *same* experienced engineering specialists who plan, design and install huge DESPATCH Finishing Systems. And your order is handled with the same painstaking care and attention to detail.

Thus you profit, even on the smallest individual unit, from years of accumulated experience and practical "know-how."

You will want the new Despatch brochure with specifications, photographs, layouts

WRITE TODAY for Bulletin C-51.

DESPATCH OVEN COMPANY

Minneapolis Office: 619 S. E. 8th Street
Chicago Office: 221 N. LaSalle Street

WIRE or PHONE for Prompt Service to Your Finishing Department

DESPATCH OVEN COMPANY

H-51

✓ CHECK YOUR NEEDS FOR METAL FINISHING

—And you will receive the latest MUNNING Bulletins. There's a MUNNING product for every plating, polishing, descaling, anodizing, alumiliting, oxidizing and deburring requirement. Your inquiry is invited. No obligation, of course.

- ☐ Abrasives
- ☐ Agitators
- ☐ Analytical Test Sets
- ☐ Anodes
- ☐ Blowers
- ☐ Brushes
- ☐ Buffs
- ☐ Burnishing Barrels
- ☐ Carboy Rockers
- ☐ Compositions
- ☐ Crocks
- ☐ Dipping Baskets (Wire or Stoneware)
- ☐ Driers
- ☐ Electroplating Chemicals
- ☐ Filters
- ☐ Gold Platers
- ☐ Generator Sets
- ☐ Immersion Heaters
- ☐ Lathes (Buffing and Polishing)
- ☐ Meters
- ☐ Plating Barrels
- ☐ Plating Conveyors
- ☐ Plating Machines
- ☐ Plating Tanks
- ☐ Rectifiers
- ☐ Tank Rheostats
- ☐ Tumbling Barrels

and other items too numerous to mention.

Do you have a production problem that needs solving? Our technical staff is at your service.

MUNNING & MUNNING INC.

Manufacturers of Electroplating, Buffing, Polishing Equipment and Supplies

202-208 Emmett Street, Newark, N. J.

Branch Offices:

Woolworth Bldg., New York City
190 Wyndham Avenue, Providence, R. I.
Bourse Building, Philadelphia

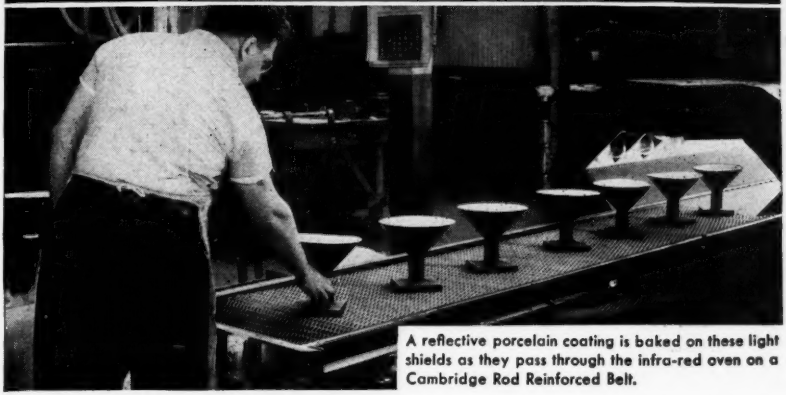
ing or finished product before placing the order. Because buyers can thus depend 100 per cent on the reports from a properly-performed abrasion-resistance test, more and more purchasers no longer rely solely on a "fingernail" test or part buying experience in specifying finishing materials.

The question of surface wear is one that is expected to grow in importance and broaden in scope now that more concentrated research is being centered on the development and improvement of product-coating materials and methods. It is equally reasonable to believe that precision-testing techniques and specialized equipment will go a long way toward simplifying the solution of the many perplexing problems that surface wear poses. Advances already accomplished in wear analysis of surface coatings are destined to increasingly help meet a long-pressing need in laboratories of various companies seeking research data on the wearing characteristics of their own or competitive finishes or those utilized in the fabrication of metal products.

Dixie Stainless Steel Products. The Dixie Manufacturing Co., Inc., 1324 Russell St., Baltimore 30, Md., now has available a 12-page catalog which illustrates and describes the facilities of the company for producing a variety of stainless steel products for practically every type of industry. Copy of General Catalog No. 47A free upon request.

"When Painting Metal" is the title of a four-page illustrated folder published by the American Chemical Paint Co., Ambler, Pa., which discusses "Deoxidine," a phosphoric acid metal cleaner, and its use in the preparation of metals for painting. Data on "Lithoform," a material designed to make paint adhere to galvanized iron and other zinc and cadmium surfaces, are also presented in the folder. Copy free upon request.

When Production Depends on Product Movement—



A reflective porcelain coating is baked on these light shields as they pass through the infra-red oven on a Cambridge Rod Reinforced Belt.

You can depend on a *Cambridge* WIRE BELT

If your products or raw materials must move during processing, call in a Cambridge engineer to discuss the proper woven wire belt for your conveyor machines.

Let us show you how Cambridge Engineered belts are specially built for specific installations — specially built from any metal or alloy to any mesh or weave.

Or, for information on the entire Cambridge line, write for your FREE copy of this illustrated folder.

There's a Cambridge Sales-Engineering Office near you

Cambridge Wire Cloth Co

Department H • Cambridge 3, Maryland

BOSTON • NEW YORK • BALTIMORE • PITTSBURGH
DETROIT • CHICAGO • SAN FRANCISCO • ST. LOUIS

Finishing Clinic

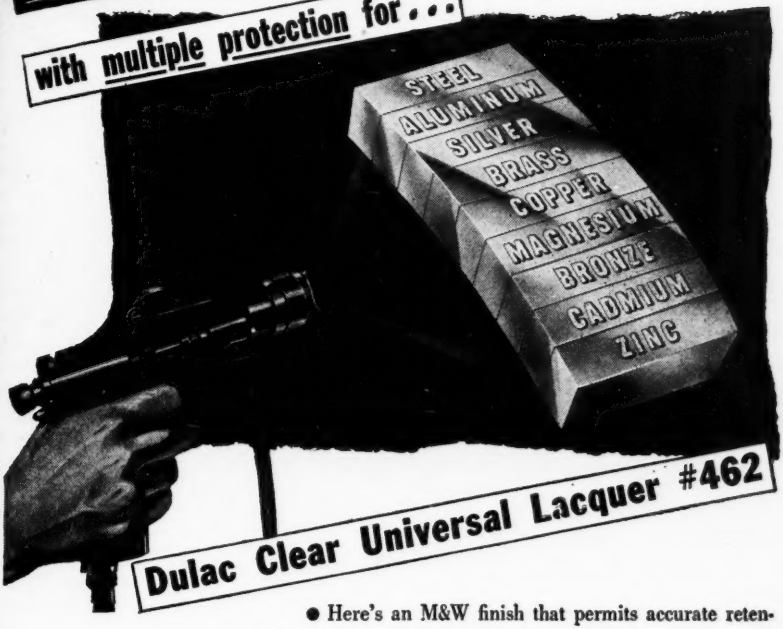
Scientific Methods Are Available for Treating Plating Room Wastes

WHILE it is true that industrial waste treatment is generally always conditioned by local circumstances and internal conditions peculiar to a given locality and a given industry, the present day finishing engineer will find it to his advantage to keep up to date on the latest methods for the treatment of wastes arising in finishing processes, in order to keep this phase of manufacturing operations in line with an acceptable standard of economy and efficiency. In this connection, two presentations were made at the Third Industrial Waste Conference held at Purdue University which described recent developments in the treatment of wastes arising in the finishing room from plating, pickling, and allied operations.

One of these was a paper by Dr. George Barnes, Head, Department of Civil Engineering and Engineering Mechanics, Case Institute of Technology, Cleveland, Ohio, in which details of a treatment works for plating wastes containing toxic metals and cyanides was described, including a plant layout, based on commercial application at the Talon, Inc. plant at Meadsville, Pa. In another paper, John G. Dobson, Wallace and Tiernan Company, Inc., Newark, N. J., brought out the fact that the treatment of cyanide waste by alkaline chlorination is now a proven commercial process which is competitive in cost with any other method that has been previously suggested for the disposal of cyanide, and has the advantages of being clean, easier to operate, and of producing an

One Lacquer, so clear it's invisible,

with multiple protection for . . .



Dulac Clear Universal Lacquer #462

● Here's an M&W finish that permits accurate retention of all desirable surface qualities of most metals . . . that adds lasting protection against heat, cold, weather, corrosion, stain and perspiration — Dulac Clear Universal Lacquer #462. It's formulated to give good adhesion with either the spray, dip or brush method. And it fits into fast production schedules because in five to ten minutes this successful general purpose lacquer dries out of dust . . . hardens in one hour. For complete information, write for Technical Data Bulletin 110 or let an M&W technical consultant discuss your requirements privately with you.

PIONEERS IN PROTECTION
M&W Co. 1876

. . . where industry goes with finishing problems

MAAS & WALDSTEIN COMPANY NEWARK 4, NEW JERSEY

Boston 15, Mass. • Chicago 12, Ill. • Los Angeles 34, Calif.
Pacific Coast Division: SMITH-DAVIS CO., 10751 Venice Boulevard, Los Angeles 34
PRODUCERS OF LACQUERS, ENAMELS, SYNTHETICS AND SPECIALIZED PRODUCTION FINISHES

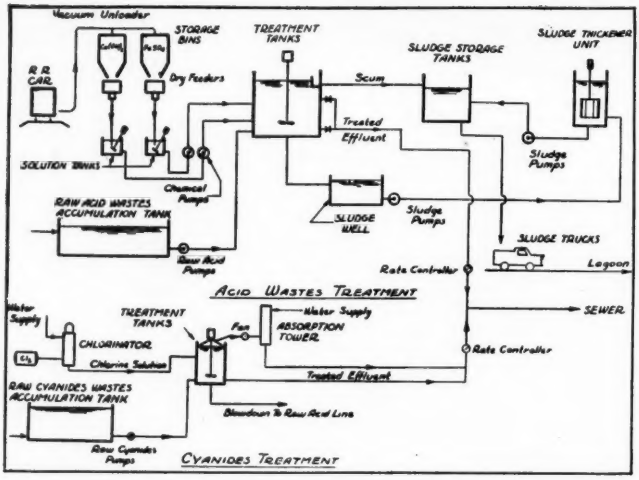


Fig. 1—Flow sheet of treatment works for acid and cyanide wastes (*Illustration courtesy Dr. G. E. Barnes, Case Institute of Technology*)

effluent which is highly desirable. The Industrial Waste Conference was sponsored by the Department of Sanitary Engineering and the Technical Extension Division of Purdue University in cooperation with associations and organizations in the State of Indiana interested in waste disposal problems.

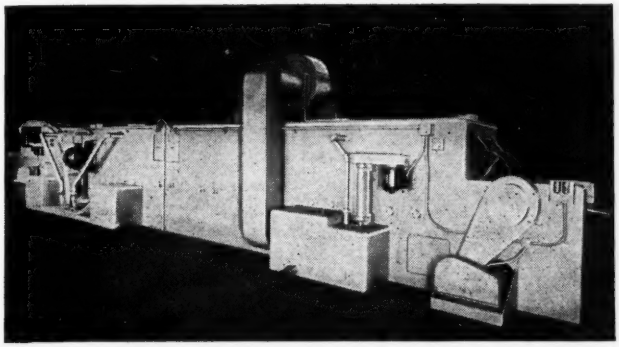
In discussing the basis of design of the new waste treatment works at Talon, Inc., manufacturer of metal fasteners ("Zippers"), Dr. Barnes pointed out that in the production of these fasteners, waste effluents will derive from four separate sources; namely, (1) acid pickling baths for descaling and decoloring, (2) nickel plating tanks, (3) the mill room for burring, burnishing, washing, and cleaning, and (4) cyanide treatment as part of zinc and copper plating. The ingredients of the waste liquors are potentially troublesome when in sufficient volume or concentration if carried along with sewage to the municipal treatment plant, and the object of treatment is to reduce their pollution effects as required under local conditions. The ingredients for which treatment schemes must be worked out include (a) spent acids, largely sulfuric with some hydrochloric and nitric; (b) heavy metals, including copper, nickel, chromium, and possibly some aluminmum and zinc, either in solution or suspension; (c) cyanides; and (d) soaps and oils or greases.

The flow sheet shown in Fig. 1, which was presented by Dr. Barnes before the Industrial Waste Conference, illustrates the basis of design for the new treatment works at Talon, Inc. The waste treatment plant as designed is a multi-purpose plant consisting of (1) facilities for the treatment of spent pickling liquor, nickel plating wastes, and mill room wastes combined, by means of ferrous sulfate and lime; and (2) facilities for the treatment of cyanide wastes by chlorination, with additional provisions for the removal of copper which is also present in these wastes in small quantities.

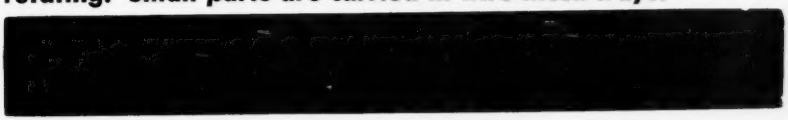
In the chemical reactions involved in the facilities of procedure (1) above, chromic salts and nickel and copper are readily removed by precipitation as hydroxides with the application of lime to raise the pH above the point required for neutralization of the acid. Ferrous sulfate is used in the treatment procedure to reduce the hexavalent chromium to the trivalent form, prior to precipitation with lime. Facilities for the treatment of cyanide wastes under (2) above provide for their disposal by treatment with chlo-

RANSOHOFF *equipment for the surface treatment of metals*

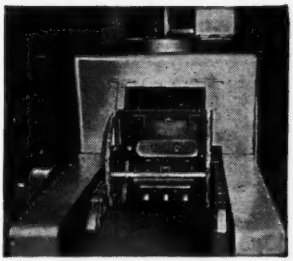
HERE'S A "JACK OF ALL TRADES" CLEAN LARGE OR SMALL PARTS IN THE SAME RANSOHOFF MACHINE



THIS machine takes 'em all . . . large complicated castings being cleaned are clamped into fixtures which roll through the machine on tracks. Driving mechanism operates with time and limit switches so that work dwells under the sprays while rotating. *Small parts* are carried in wire mesh trays.



Equipped with
RANSOHOFF PACKLESS PUMP *and* **UNI-DRAIN**



Write for
RANSOHOFF ENGINEERS *to call in your plant, without obligation, to discuss your cleaning.*

N. RANSOHOFF, Inc.
1311 TOWNSHIP AVE., CINCINNATI, OHIO

rine. The chemical reactions involved in the chlorination of cyanides were dealt with in some detail by Mr. Dobson in his paper before the Industrial Waste Conference, and they will be taken up in a following section.

Pointing out some of the details of the waste disposal plant, Dr. Barnes stated that the system was, in effect, two plants operating in parallel but interconnected, one of the treatment tanks being a dual purpose tank to handle either type of treatment at will. Major considerations of the treatment plant, emphasized by Dr. Barnes, were (a) mixing the mill room wastes with acid wastes to add alkalinity and to save lime, and obtaining the effect of acid coagulation on the mill room wastes for better separation of soaps and oils to be skimmed off; and (b) forming a minimum of sludge by treating the cyanide wastes separately by chlorination. The batch-type of plant was adopted rather than the continuous flow type because of the more accurate control and economy in chemical dosage which is possible, and also to make the plant more amenable to unpredictable changes in the character of the wastes to be treated.

Treatment of Cyanide Wastes by Chlorination. As mentioned earlier, in discussing the chemistry involved in the use of chlorine to oxidize the cyanide radical in plating room wastes, Mr. Dobson, in his report before the Industrial Waste Conference, stated that when chlorine is added to a solution containing cyanide, with sufficient free alkali present to maintain a pH above 8.5, the cyanide is oxidized to cyanate according to the reaction which follows:

$$NaCN + 2NaOH + Cl_2 \rightarrow NaCNO + 2NaCl + H_2O$$

Based on tests conducted in the Wallace and Tiernan Laboratories and reported by Dobson, the reaction was found to be practically instantaneous

ELECTRO COLD STRIPPER

A Radical Advance in Speedy Finish Removal

USED COLD. NON-INFLAMMABLE. NON-INJURIOUS TO HANDS OR METAL.

Removes paint, lacquer, enamel, synthetic or wrinkle almost instantly. You can see the finish literally "pop off." No bother—no fuss. Simply dip the article into Cold Stripper, wait a few moments for film to loosen, shake well and let set a few minutes. Then wash with pressure stream of water or wipe well with rag AND REFINISH AT ONCE.

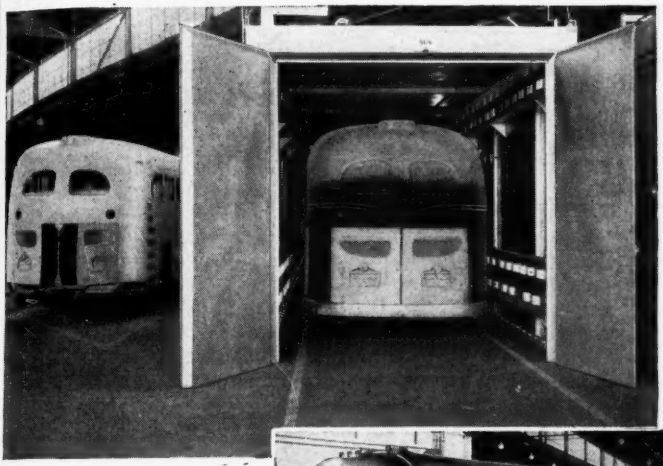
Will not affect aluminum, brass, copper, magnesium, zinc, steel or cast iron or their alloys in the time required for removal of paint film—even when metal is precision ground or machined.

Write for sample and quotations—or order 5 gallons at Drum Price.

ALLIED FINISHING SPECIALTIES CO.

2637 W. GRAND AVENUE **CHICAGO 12, ILL.**

Mask Their Busses Immediately
For Next Coat After Quickdry
with **BURDETT** (INFRA-RED) **GAS SYSTEMS**



Interior of Burdett Infra-Red Oven—measuring 12' wide x 45' long x 12' high — shows General American bus with first finish coat of paint.

Just out of the Oven—General American Aerocoach has bright paint job dried quicker with Burdett Infra-Red System.

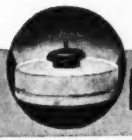
At the East Chicago, Indiana, plant of General American Aerocoach, two large **Burdett Infra-Red Gas Ovens** are used for paint drying of new busses. By using Burdett Systems, successive coats of paint are dried just as fast as the bus bodies can cool sufficiently to permit the placing of new paint masks.

There is no paint "tackiness" . . . and no chance of a wet spot remaining. **Burdett Infra-Red** takes care of that. Lacquer dries in 15-20 minutes at 170°; enamel dries in 30-35 minutes at 180°.

For Burdett, these are unusually low temperatures and likewise slow drying *BUT* . . . it allows General American one unique feature. Their Busses can be painted fully equipped ready to drive away. There is no damage to glass, tires, engine or interior fittings.

Important!

Write today for colorful all-new 12-page Illustrated Bulletin. See what the Burdett Infra-Red System can mean to you.



3447 West Madison St., Chicago 24, Ill.

BURDETT MANUFACTURING CO.
INFRA-RED GAS BURNERS

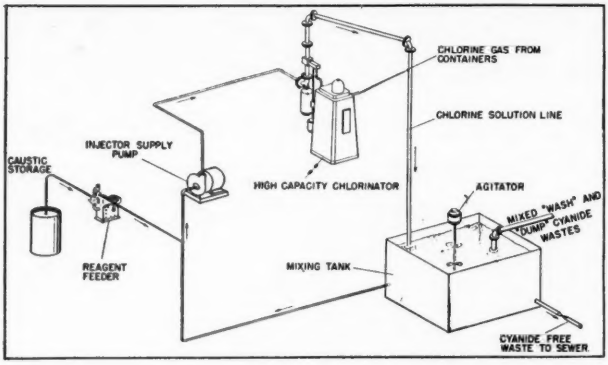


Fig. 2—Schematic layout of plant for treating cyanide wastes by chlorination
(Illustration courtesy Wallace & Tiernan)

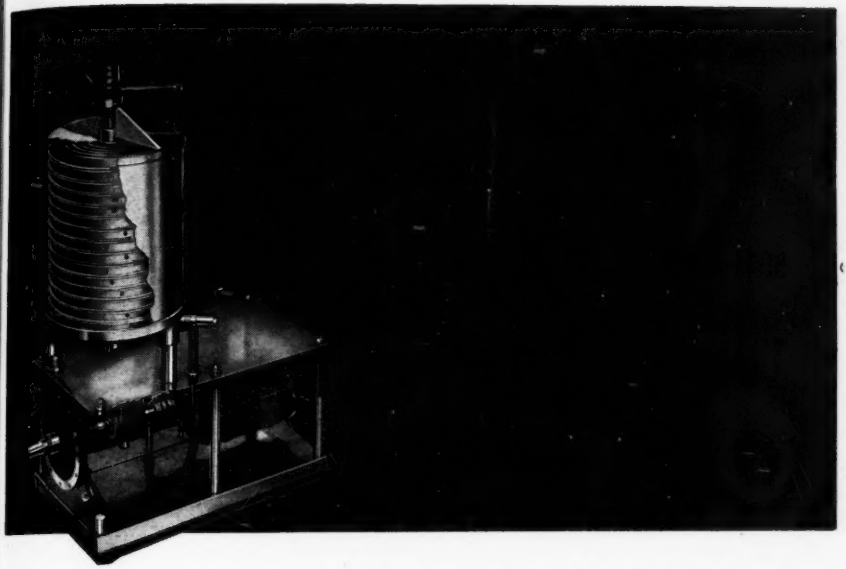
under all conditions, being complete in less than one minute. Theoretically, it requires 2.73 parts of chlorine per part of cyanide. It was pointed out that most wastes contain a substantial portion of the required free alkali. If an excess of chlorine is added, free chlorine residual will be found in the solution after one or two minutes. It was reported by Dobson that in all trade wastes and laboratory samples that have been tested, no cyanide within the limits of titration accuracy has been found in the presence of free available chlorine at pH 8.5.

The oxidation of free cyanide by chlorine has been checked in the Wallace and Tiernan Laboratories, as reported by Dobson, according to the following procedure: To a known potassium cyanide solution, having a concentration of about 50 p.p.m. cyanide, a boric acid-sodium hydroxide buffer is added to hold the pH at 8.5. When a quantity of chlorine is added, which is substantially less than the theoretical amount required to oxidize all the cyanide to cyanate, the reaction occurs almost quantitatively. For instance, in a potassium cyanide solution containing 50 p.p.m. cyanide, when enough chlorine is added to theoretically convert 58 per cent of the cyanide to cyanate, 58 per cent of the cyanide disappears and 49 per cent of the cyanide appears as cyanate. However, as more chlorine is added to such a solution, particularly beyond the 2.7:1 ratio, the cyanate which is formed is again oxidized, according to the following equation given by Dobson:

$$2NaCNO + 4NaOH + 3Cl_2 \rightarrow 2CO_2 + 6NaCl + N_2 + 2H_2O$$

To carry out this second oxidation, it requires 4.09 parts of chlorine per part of cyanide and 3.08 parts of caustic soda, or the total oxidation of the cyanide to carbon dioxide and nitrogen requires 6.82 parts of chlorine and 6.16 parts of caustic per part of cyanide. This second reaction occurs very much more slowly and in order to reach completion, excess chlorine must be added. While the cyanide oxidation has been shown in two steps, it was pointed out by Dobson that in commercial applications the reaction can be carried out in a single contact tank if sufficient chlorine is added initially.

Treatment Plants. A simple type of treatment plant which is applicable to the small industrial establishment is illustrated in Fig. 2, and was presented by Mr. Dobson before the conference. Here the concentrated and dilute cyanide solutions are carried to a central mixing tank which is provided with an agitator. After the waste liquor has been fed into the storage tank, the pH of the waste can be raised, if necessary, by the addition of sufficient lime directly into the tank, or by the gradual addition of caustic as the solution is pumped from the tank. After the waste



The last word in SIMPLICITY *and* ALL 'ROUND EFFICIENCY

HERE'S WHAT IT DOES FOR YOU

You can put an end to costly rejects and reworking once and for all, Sealed-Disc Filters remove all dirt, dust, oil and sludge from your plating solutions and then keeps them bright and clean.

You'll no longer worry about pitting, spotting, poor adhesion, formation of nodules, etc., you'll get more perfectly finished work with a saving of time and labor.

This look inside the "Sealed-Disc" Filter tells the story of the new filtration principle which is responsible for the enormous, filtration area and great capacity in such a small compact unit. This is why "Sealed-Disc" Filters are capable of handling as large a volume of solution as conventional filters many times their size.

For complete details ask for your copy of catalogue P-347.

HERE'S HOW IT WORKS

The liquid flowing into the filter, fills the cylinder and passes into each of the sludge rings, and through the filter discs under and above the rings. The dirt, dust, oil and all impurities are positively held back by the specially constructed discs.

The bright, clean, filtered liquid from each disc enters directly into the perforated screen next to it, runs through the channels in the screen to the common perforated outlet post in the center. Each and every disc used acts as an individual, separate and positive filter.

As the liquid pressure in the filter is equalized all over, except where the discs touch the perforated screens, excess pressure cannot distort the internal parts or cause the liquid to pass through without being filtered. The entire surface and depth of each disc is used effectively to collect impurities and thus prevents surface sealing, and means longer disc life.

ALSOP

ENGINEERING CORPORATION

Filters · Filter Discs & Sheets · Mixers · Agitators

303 Keen Street • Milldale, Conn.

has been thoroughly mixed and the pH adjusted, it is then pumped from the tank through the injector of the chlorinator where a controlled and measured amount of chlorine is added and returned to the storage tank. To avoid objectionable fumes, the pH of the waste must be carefully controlled, and the dissolving and mixing of the chlorine and waste must be rapid and complete. Local acidification must be carefully avoided.

A plant disposal unit designed in accordance with these general principles was presented by Dr. Barnes, as representative of the general scheme to be used at Talon, Inc. for the cyanide treatment part of the waste disposal plant. In this scheme, as shown in the flow sheet previously referred to in Fig. 1, the cyanide wastes are collected by gravity in holding tanks and pumped to one of two 30,000-gallon capacity circular wood treatment tanks, in which they are chlorinated and, after testing, released to the sewer at a mechanically controlled rate. These tanks, it was pointed out by Dr. Barnes, are equipped with vertical shaft, impeller-type agitators, and have fitted hoods to collect the atmosphere above the chlorinated liquid. This atmosphere will be drawn off by exhaust fans and passed through an absorption tower to dissolve any vapors coming from the tanks. A cascade outlet on the sewer provides further opportunity for capturing any vapors that might go along with the effluent. The tankage is ample to allow a day for transfer and treatment, and a day for release of the treated cyanide wastes.

Continuous Treatment. When the quantities of waste being discharged from a finishing room are so large as to make retention tanks too large for

PAINT REALLY STICKS

WHEN METAL PARTS ARE THOROUGHLY CLEANED IN A

BLAKESLEE

METAL PARTS WASHER

Write for FREE booklet on Blakeslee Metal Parts Washers.

G. S. BLAKESLEE & CO.

BLACOSOLV DEGREASERS AND SOLVENT

NIAGARA METAL PARTS WASHERS

G. S. BLAKESLEE CO., CHICAGO 50, ILLINOIS · New York, N. Y. · Toronto, Ont.

Spray It On — Peel It Off

SAVE TIME
SAVE MONEY

PEEL SPRAY BOOTHS CLEAN—IN MINUTES

LIQUID ENVELOPE
PEELABLE PLASTIC

SPRAY-BOOTH COATING

Gives You All These Advantages

1. Sprays on fast—with regular equipment. 2. Dries quickly —film non-combustible. 3. Peels in big sheets—as easy as peeling a banana — no matter how heavy or light the accumulated spray dust. 4. Eliminates paper, grease, hand scraping, fire-hazard. 5. White color improves booth illumination. 6. Concentrated for economy—reduce with lacquer thinner. 7. Good coverage at low cost. Attractive price on drum orders.

Note: "Liquid Envelope" is being used in hundreds of large and small plants. It is a product of America's longest and broadest experience in making *peelable* plastic films. For assured satisfaction, be sure to get original and genuine "LIQUID ENVELOPE" Spray Booth Coating.

BETTER FINISHES AND COATINGS, INC.

264 DOREMUS AVE., NEWARK 5, N. J. 122 EAST 7th STREET, LOS ANGELES 14, CALIF.

Take Advantage of this TEST-SAMPLE OFFER

5-gallon can shipped prepaid on a money-back guarantee $17.50. Attractive low price on quantity re-orders makes "LIQUID ENVELOPE" your best buy.

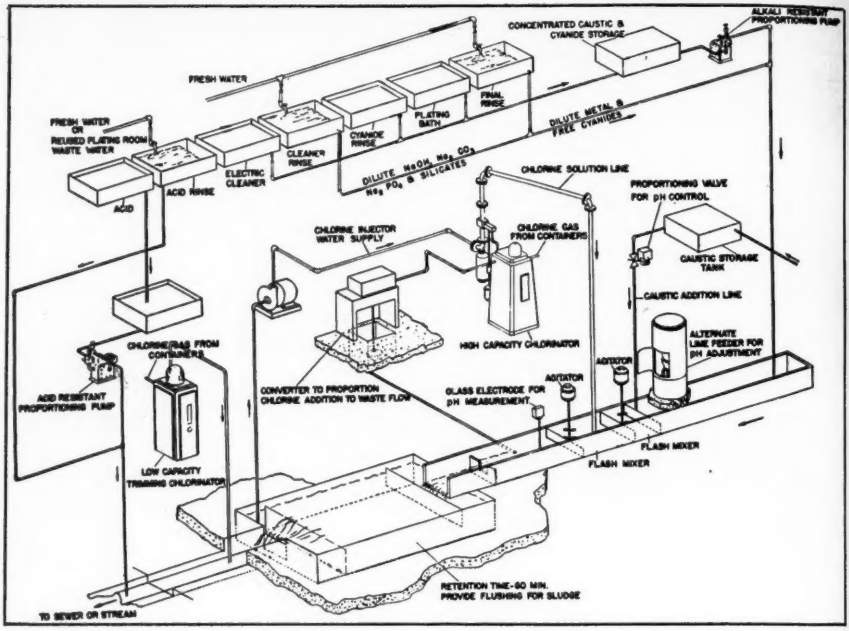
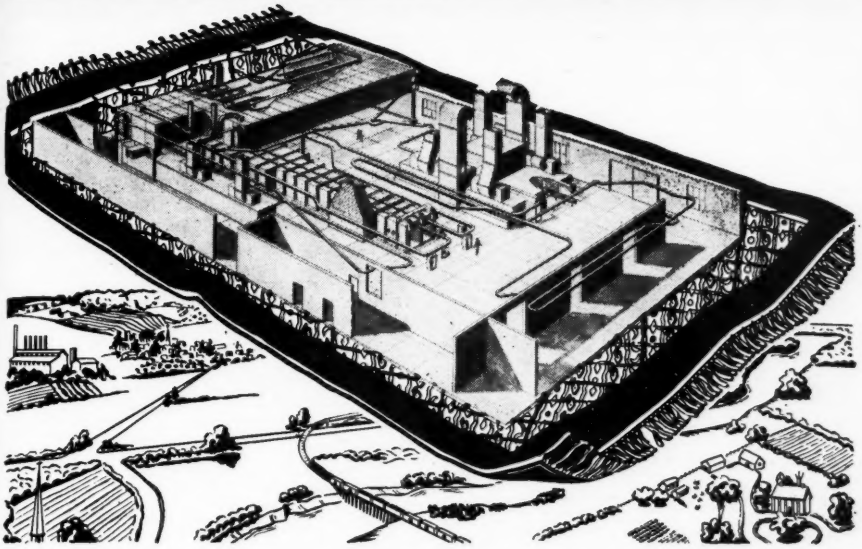


Fig. 3—Schematic layout of plant for continuous treatments of cyanide wastes by chlorination (*Illustration courtesy Wallace & Tiernan*)

economical construction, a continuous treatment process, such as illustrated in Fig. 3, was recommended by Mr. Dobson to the Waste Conference. Thus, in such a system, the waste from the plating operations, including the wash water from alkaline and electrolytic cleaners, from cyanide rinses, and from plating rinses, are carried continuously to the treatment plant. Concentrated cyanide waste, including a dump solution of cyanide rinse and dump plating bath solutions, is carried in a separate sewer into a storage tank and proportioned into the general waste system by a reagent pump. The addition of chemicals to this solution can either be carried out in a flume, as indicated in the drawing, or in a pipe line, whichever seems more economical. The alkali, either sodium hydroxide, hydrated lime, or soda ash, is added at a rate sufficient to hold the pH at the required value. The choice between hydrated lime and sodium hydroxide is a matter of balancing the lower cost of the lime against the ease of feeding of the liquid caustic. Another factor to be considered is the production of sludge when lime is used.

In the larger plants, the use of automatic dry feed equipment for feeding the lime can be justified. If caustic is used, a proportioning valve or a reagent feeder should be used. In either case, the rate of addition of the caustic should be controlled by a glass electrode pH apparatus located beyond the point of chlorination. Chlorine should be added, using pumped plant effluent for the operation of the chlorine injector. If there are wide variations in the rate of flow, an automatic chlorinator can be used. It was pointed out by Mr.

GEORGE KOCH SONS, INC.



LIKE RIDING ON A MAGIC CARPET

When you have a KOCH-ENGINEERED finishing department it merely ***seems*** like magic. Actually it's the design and engineering "know how" that makes your finishing department production seem unbelievable. But the ***money savings*** are there just the same.

KOCH does the complete-job for you—from initial layout to final installation and tested operation. Price and performance will be right, too.

Write for Circular D-2

GEORGE KOCH SONS, Inc.

EVANSVILLE 4 **INDIANA**

COMPLETE FINISHING SYSTEMS

Dobson that a plant, substantially as shown in Fig. 3, has been built and is in operation. It was designed for an average flow of 400 g.p.m., with a concentration of 100 p.p.m. of cyanide. It was reported that operations to date have yielded a cyanide-free discharge.

* * *

Protective Metallic Coatings from Salt Baths

AS a result of studies reported by Harry R. Hoge, Mellon Institute of Industrial Research, Pittsburgh, in a recent issue of "Metal Progress" (November 1947), protective coatings on steel articles, so thin that fine dimensional tolerances are not disturbed, can be produced from molten salt baths. Cementation with molten salt baths, as the process is called, was reported to be a convenient and easy method for coating small and intricately shaped metal objects. One type of bath, cited as satisfactory, consisted of stannous chloride, either pure or diluted with relatively small amounts of ammonium chloride or other chlorides, and in some cases having some excess metallic tin dissolved in it.

As described by Hoge, there are two ways in which this cementation process may be carried out, although one of them is only a slight variation of the other: In Method I, the salt mix of desired composition is brought to the operating temperature and the objects to be coated are then dipped in the salt bath. When the articles have been in the salt bath for the proper length of time, they are removed, quenched in water, and dried. In Method II, the objects to be coated are first heated to a bright red heat and then quenched in the molten salt bath, subsequently following the same procedure as in Method I. Method I is said to permit greater control of the coating thickness, and is not likely to affect the microstructure of the metal being coated, whereas Method II is reported as being very fast (for example, coatings can be obtained in 1 to 3 seconds), and it is not necessary to control the bath temperature as closely as in Method I.

In general, salt baths for the cementation coating process may contain one or more salts, depending on the coating desired, the condition of the surface of the material being coated, the rate at which the coating is to be produced, and the temperature at which the coating is to be applied. Coatings may be bright or dull, single metals or alloys, thin or thick, or combinations thereof. For example, it was reported that a bright alloy coating may be deposited on iron by dipping the part in a molten mixture of 90 per cent stannous chloride with 10 per cent cadmium chloride. The use of a lower bath temperature or shorter time of immersion will yield a dull coating from the same bath.

A temperature of 300 deg. C. (570

BUFFER • POLISHER
SURFACER
Centerless
"Production" Type S

This machine combines a centerless feed polishing machine with a vertical or horizontal belt grinder, surfacer, polisher or buffer for both cylindrical and flat work. Can be used for anything that can be ground or polished—metals, rubber, fibre, wood, etc.

PRODUCTION MACHINE CO.
GREENFIELD MASS.

FOR THE "Top" Black Finish ON IRONS & STEELS USE

JETAL BLACK

JETAL is the original black finish.

JETAL resists wear and penetration better than any black on the market.

JETAL will not chip, peel, crack, crumble or dust off, even on bending or cutting.

JETAL does not change metals dimensionally after application.

JETAL forms a fine base for lacquer, enamel or japan.

JETAL is a black BLACK, deep and solid.

JETAL is tough, long lasting and adaptable.

JETAL is a black oxide coating that is easily and inexpensively applied by immersion for 5 minutes.

JETAL is a tough, speedy blackening for your irons and steels.

JETAL may be resistance or spot welded.

Bring your finishing problem to Alrose for the best economic and scientific solution.

JETAL COSTS LESS and can be applied by immersion in bulk, baskets or barrels.

TO STOP RUST USE JETOIL 1A

JETOIL 1A is an Alrose product that effectively guards against rust. Used as a supplemental oil film after JETAL coating, it protects during assembly, inspection, storage or in service; rust is not apparent on such coating until after more than 50 hours salt spray testing.

OTHER ALROSE FINISHES . . .

BLACK

OXIDINE B — for blackening copper and brass. **OXIDINE Z** — for blackening zinc.

WHITE

BON WHITE — an immersion tin finish for copper, brass — exceptionally bright white — ideal soldering base.

WHITE BRASS — plates a tertiary alloy of copper, zinc and tin, giving brilliant, non-tarnishing, long-wearing surface over all precious or base metals.

ALROSE CHEMICAL COMPANY

Manufacturing and Research Chemists

PROVIDENCE • RHODE ISLAND • WILLIAMS 3000

deg. F.) was reported to be an average operating temperature for baths consisting predominantly of stannous chloride. The operating temperature to be used for a salt bath in this process, it was reported, depends to a very large extent upon the fluidity of the mix. A very fluid bath will wet all parts of the objects being coated at approximately the same time. In dealing with coatings on very small parts, this property is important in view of the fact that if the whole surface of the object is not wet at the same time, the coatings will be too thick in some spots and too thin in others. The addition of 5 to 10 per cent of ammonium chloride to tin chloride melts has been found to be effective in reducing the fluidity of the coating baths. Also, in some cases it may be desirable to slow down the rate at which tin plates on iron from molten stannous chloride, and this can be done by the addition of 5 to 25 per cent ammonium chloride to the tin chloride bath. The curve in Fig. 4 shows the variation in thickness of tin coatings on steel, with time, produced at 300 deg. C. from a bath made up of 95 per cent stannous chloride and 5 per cent ammonium chloride. It was reported, also, that other salts may be added to the molten coating bath to serve as fluxes; one example cited was the addition of calcium fluoride to the stannous chloride baths to help remove or dissolve metal oxides from the surface of the metal being coated, thus ensuring a more uniform coating.

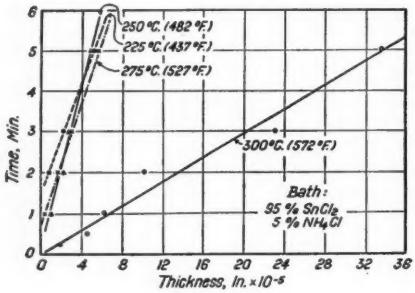


Fig. 4—Chart showing variations, with time, in thickness of tin coatings on steel produced at constant temperatures from a molten salt bath (*Illustration courtesy "Metal Progress"*)

One other factor that was investigated was the effect of iron build up in the bath on the operating characteristics, which showed that in practice, "tinning" may be carried out in a stannous chloride bath as long as the iron content is less than 5 per cent. Methods for the removal of iron from the bath at the same rate as it is taken in were investigated, which showed the possibility of removal by the use of graphite electrodes in the bath, with electrolysis at low current densities, although the exact conditions were not worked out. It was also reported that the effects of the presence of iron in the cementation coating bath may be compensated for to some extent by the addition of pure metal to the bath. For example, tin may be added to a tin chloride bath to reduce, to some extent, the harmful effects of the iron.

* * *

A New Instrument for Measuring the Flexibility and Adhesion of Surface Coatings

THE main feature of the Flexibilometer, a new instrument for measuring the flexibility and adhesion of surface coatings, is a mandrel of special design. The test instrument, which is said to overcome some of the inadequacies of existing mandrel tests for organic coatings, was developed by Dr. H. W. Chatfield in England, and is described in "Paint Manufacture" (England, Sept. 1947). The design of the test instrument is such that it can be driven at any predetermined speed, a wide range of extensions in the coated strip can be obtained by the use of

YOU CAN GET A LACQUER TO RESIST

WATER...

BUT WILL IT BE RUINED BY SWEAT?

Unichrome Coatings offer you the Right Combination of properties for your product... every time!

Air-drying lacquers seldom resist exposure and perspiration equally well. But often, that's just the combination you need for decorative hardware. The *right combination* also includes hardness, high gloss, extra adherence. Unichrome Coating A-112 supplies them all.

In fact, one lock manufacturer not only greatly improved his product with A-112's combination of properties, but actually saved production time. Its exceptional adherence eliminated his need for cleaning brass after buffing.

Whatever you make, chances are there's a Unichrome Coating that's *exactly right* for your product—for service requirements, for eye-appeal. It will pay you to look it up. Write us today on the properties you need in a coating, and we'll send you full information. No obligation, of course.

UNICHROME SYNTHETIC COATINGS AND LACQUERS

Products of UNITED CHROMIUM, INCORPORATED

51 E. 42nd St., New York 17, N.Y.

Detroit 7, Mich. • Waterbury 90, Conn. • Chicago 4, Ill. • Dayton 2, Ohio • Los Angeles 11, Cal.

a single mandrel only, and the mandrel can be easily enclosed in a thermostatic and humidity controlled box of simple construction, if desired. In addition, a comparatively large area of coating can be explored, thus reducing considerably the number of coated strips which need be prepared.

A sectional view of the mandrel used in the test is shown in Fig. 5. The man-

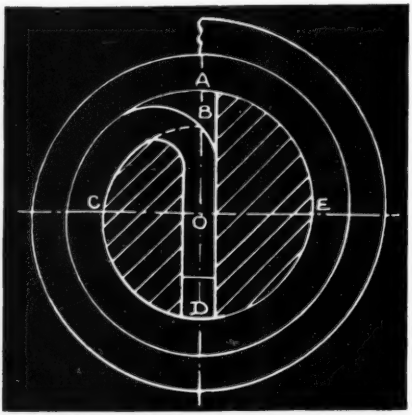


Fig. 5 — Sectional view of mandrel used in measuring flexibility and adhesion of organic coatings
(Illustration courtesy "Paint Manufacture")

drel is the shaded portion, and the unshaded portion is the coated strip wound in position. The first important point in the design of the mandrel, as pointed out by Dr. Chatfield, is that it is slotted at a diameter, and the slot is of such dimensions that the coated strip fits snugly into it. The coated strip passes from the slot of the mandrel, the exit of which is specially rounded on one side so that the strip can be bent smoothly as it first emerges from the slot. This "rounding" of the edge of the slot is illustrated in Fig. 5. The strip passes from the slot, following its rounded edge, and then around the outer surface of the mandrel. The coating on the strip is located on the outside of the bend.

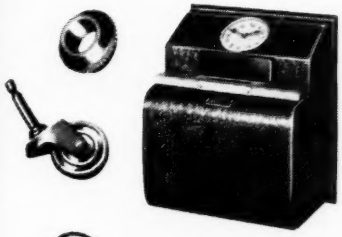
The outer surface of the mandrel is so arranged that when the strip makes one complete passage around it, the radius of the mandrel has increased by the thickness of the strip, which passes smoothly over its starting point for its second passage around the mandrel. Thus, the mandrel, as pointed out by Dr. Chatfield, can be regarded as gradually increasing its radius, and the more passages the coated strip makes around the mandrel, the greater the effective diameter of the mandrel becomes. Therefore, after the first passage of the strip around the mandrel, it is the strip itself which provides its own bending surface; for example, in Fig. 5 the coated strip has made two passages around the mandrel.

Since, as brought out by Dr. Chatfield, the maximum stretching of a coating occurs when its supporting strip is bent around a mandrel of smallest d i a m e t e r, the maximum stretching of the coating occurs with the Flexibilometer at the commencement of the determination, and thereafter the amount of stretching to which it is subjected gradually diminishes. Most cracking is observed, thus, at the beginning, and the coated strip can be wound up until no further cracks are observed. If then, the effective diameter of the mandrel is measured, this measurement represents the diameter of mandrel around which the coating can be bent and which just does not cause cracking. From this diameter, the precise extension which the coating will stand without cracking can be calculated. One point emphasized by Dr. Chatfield is that precise measurements are possible due to the fact that the effective mandrel diameter is increased slowly and evenly.

It was found by Dr. Chatfield in his work that a certain amount of tension must be applied to the free end of the coated strip to ensure that it is wound

here is greater RUST-RESISTANCE in a matte black finish

PARKERIZING



Parkerized parts are appearing in an amazing proportion of the machines produced by American industry. Automobiles, for example, have numerous parts, from carburetors to cotter pins, that are finished with this treatment.

Present-day Parkerizing has been developed during a third of a century of experience and constant research. In speed, ease of application, simplicity of control, economy, and effectiveness, the treatment has been continually improved and tailored closely to the needs of today's manufacturing. Low initial equipment cost makes the process readily adaptable to high or low production schedules.

Parkerizing is excellent as rust protection on forgings, castings, stampings, screw machine and wire products, tools, nuts, bolts and threaded articles. Combined with the many special stains, oils, or wax finishes Parker has developed, Parkerized articles have an attractive, matte black finish that provides outstanding corrosion resistance.

Write for FREE catalog on Parkerizing, its advantages and its uses.

Bonderite, Parco, Parco Lubrite – Reg. U. S. Pat. Off.

Parker

PARKER RUST PROOF COMPANY
2172 East Milwaukee Ave.
Detroit 11, Michigan

BONDERIZING Holds Paint to Metal . . . PARKERIZING Inhibits Rust . . . PARCO LUBRIZING Retards Wear on Friction Surfaces

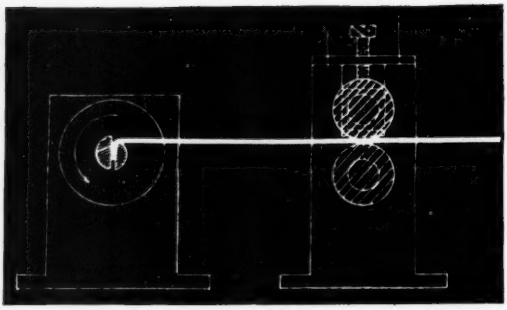


Fig. 6—Sectional view of test instrument showing arrangement of mandrel with tension rolls (*Illustration courtesy "Paint Manufacture"*)

up tightly, and for this purpose the strip passes between two tension rollers, such as indicated in Fig. 6. The top roller is adjustable vertically by means of a screw pushing onto a spring. It is thus possible by adjusting the screws, one at each end of the rollers, to apply any desired pressure to the surface of the coated strip and thereby to vary the tension on it.

The mandrel shaft itself is also fitted with two discs arranged radially, so that the coated strip is wound up between them and is prevented from deviating in an axial direction. Two vertical guide pins were inserted in the base plate of the apparatus beyond the tension rollers to keep the free end of the strip in strict alignment and to prevent wandering.

The actual rate at which bending and stretching of the coating occurs, as explained by Dr. Chatfield, is of importance. For very accurate work a motor-driven instrument is preferred. However, a high degree of accuracy can be obtained with the Flexibilometer if it is hand driven, since a careful operator with practice working with the second hand of a stop watch can wind up the strip at a fairly uniform rate. Thus, as pointed out by Dr. Chatfield, it is much easier to wind a strip with a continuous circular motion at a given speed than to bend a coated strip through an angle of 180 degrees at a uniform speed, as would be required for the usual mandrel test.

Surface Preparation Important in Painting Exterior Steel Surfaces

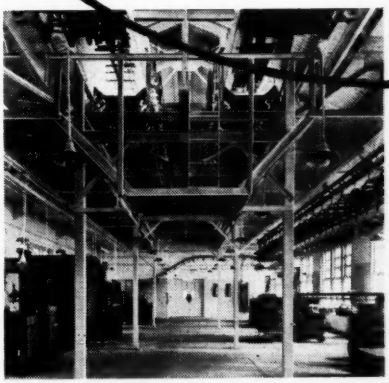
WHILE many factors may contribute to the durability of exterior painted steel surfaces, none is more important than surface preparation of the work prior to painting. Thus, as pointed out by Rick Mansell in a comprehensive discussion of the principles of painting exterior surfaces in "Corrosion and Material Protection" (September-October, 1947), any time or labor saved in cutting down on proper surface preparation may be more than wasted later on, as a result of the consequent necessity for a premature renewal of the protective coating.

Paint cannot adhere permanently to metal surfaces, nor can it prevent their corrosion, unless it is placed into intimate contact with the sound, dry metal. If the metal surface is covered with rust, dirt, grease, or mill scale, then such an intimate contact is prevented. As a result, rusted areas will continue to corrode, mill-scale will chip off, and the presence of grease will be responsible for inferior paint adhesion, leading to ultimate paint peeling.

Many metal surfaces, as pointed out by Mansell, tend to occlude grease and rust within their pores and for this reason, the advantage is readily understood of a sandblasting treatment for surface preparation which produces a bright and shiny surface with all pores cleaned out. After sandblasting it is advisable to apply the protective coating almost immediately, or at least

INFRA-RED OVERHEAD ... by G-W

Take advantage of the "air rights" in your plant—the thousands of cubic feet of ceiling space that can be utilized for greater plant efficiency and relief of congested floor areas. Finish your products in overhead baking tunnels with G-W Conveyors. • For doubled efficiency, infra-red processing was done overhead in the two typical G-W installations illustrated. Combined here are the space-saving, labor-saving, and safety features of overhead conveying, with the advantages of G-W Infra-Red systems: uniform heat evenly distributed, tough, hard finishes that reduce smudging, chipping or cracking. • Such a combination can well show a three-fold increase in production capacity. Let a G-W engineer plan an infra-red system to fit *your* plant requirements.



GIFFORD-WOOD CO. • 420 LEXINGTON AVE., NEW YORK 17 • 565 W. WASHINGTON ST., CHICAGO 6
Factory: Hudson, N. Y.

G-W HANDLES IT...
faster • easier • cheaper

GIFFORD-WOOD
SINCE 1814

4066

within a few hours to avoid the formation of new rust, since a freshly sandblasted surface tends to rust very rapidly. A good rule to follow in this respect is that no more metal be sandblasted in one day than can be conveniently primed, since sandblasted surfaces left unpainted over night will usually rust by morning.

"Galvanic Corrosion of Dissimilar Metals as Applied to Gas Hot Water Storage Heaters" is the subject of a 24-page illustrated report now being issued by the American Gas Association, 420 Lexington Ave., New York 17, N. Y. Prepared by Dr. Robert C. Weast of Case Institute of Technology, Cleveland, the report discusses the conditions which cause tank failure by corrosion from stray electric currents and presents results obtained from small scale tests conducted in finding a means of stopping galvanic corrosion of dissimilar metals as applied to domestic gas hot water storage tanks.

Copy of the report is offered free to interested executives addressing requests on their company letterheads.

Divco 71-Point Lead Anodes for maximum efficiency in chrome plating are illustrated and described in a four-page technical bulletin released by the Division Lead Co., 830 W. Kinzie St., Chicago 22, Ill. Construction details of the anode are fully covered. Copy of Technical Bulletin No. 8A free upon request.

"Variable Speed Semi-Automatic Plating Conveyors" is the title of a four-page bulletin issued by the Belke Manufacturing Co., 947 N. Cicero Ave., Chicago 51, Ill. The bulletin describes design characteristics of Belke plating conveyors and is illustrated with photographs showing typical installations. Copy free upon request.

"Plating and Polishing News" is the title of a quarterly publication sponsored by the Hanson-Van Winkle-Munning Co., Matawan, N. J., devoted entirely to Hanson-Van Winkle-Munning products and literature. Various items of equipment are described together with available catalogs and bulletins supplied by Hanson-Van Winkle-Munning.

"Ceratherm-500"

the

HEAT-SHOCK RESISTANT CHEMICAL STONEWARE

For Pickling, Plating, and Stripping Tanks— for Acid Storage

Chemical Stoneware plating tanks, made from "Ceratherm-500," are ideal for pickling, plating or stripping small parts. They are acid* and alkali-proof all the way through; are 27% more rugged than standard stoneware tanks; possess excellent resistance to heat shock; are completely free from any tendency to contaminate solutions.

*except for hydrofluoric.

Rectangular tanks are made in capacities ranging from 4 gallons up to 320 gallons; cylindrical pots and tanks in capacities from 5 to 500 gallons.

At Your Plating Supply Dealer or Write Direct

U. S. STONEWARE

Akron 9, Ohio

Cleaning Small Parts

By JOHN E. HYLER

A number of plants have found the cleaning of very small parts, preliminary to plating or finishing, a considerable problem, especially when such parts are handled in relatively small lots and only at long intervals. In some instances, this problem has been solved by simply putting small parts to be cleaned into small wire baskets which resemble an old-fashioned corn popper, with an extended handle, and swishing them back and forth through whatever cleaning solution is being used. This method is particularly recommended in those cases where relatively violent agitation of parts in the cleaning solution proves advantageous. However, in the majority of cases, it is admittedly not necessary to agitate parts so violently in the solution, especially when an efficient cleaning agent is being used.

In most instances, where parts are to be cleaned in immersion tanks, shallow and rigid-bailed wire baskets are employed, as shown in Fig. 1. Manufacturers of wire baskets for industrial purposes in general can provide practically anything that is needed along this line, including baskets with lids that close and latch, so that more violent agitation can be obtained if desired. Sometimes, where small parts contain recesses, which might trap and retain cleaning solution, baskets of the revolving type can be used. After lifting from the cleaning solution, the basket is revolved on its axis once or twice to remove all trapped solution from recesses in the parts.

It is interesting to observe that where the work is cleaned in auto-

Fig. 1—Shown here is an immersion type of degreaser often used in plating rooms for the removal of oil and grease. Small parts can be very readily cleaned in sizable lots through the use of shallow, rigid-bail baskets of the type illustrated. (*Photo courtesy Detrex Corp., Detroit, Mich.*)

I am a better typewriter because of Pennsalt descaling

HOW SMITH-CORONA PUT A BETTER NICKEL PLATE ON BRASS AT LOWER COST

To remove fire scale from brazed brass typewriter parts, L C Smith & Corona Typewriters Inc. had been pickling the parts in muriatic acid. They followed this with a scratch brush to remove smut. At best, the job was slow, and it was felt that the number of nickel plating rejects could be reduced.

The Pennsalt field representative spotted the trouble, and recommended a Pennsalt pickling medium. Result? Much superior pickling . . . scratch brushing eliminated. ". . . but best of all," said the plater, "the resulting plate is better, with little or no rejects."

. . . Send for case report

If you'd like more details on this case, write us for Case Report No. 65-7. It gives full facts on this job, plus interesting data on the Pennsalt product used. And it shows the kind of service you can expect when Pennsalt know-how goes to work for you.

PENN SALT

CHEMICALS

98 Years of Service to Industry

PENNSYLVANIA SALT MANUFACTURING COMPANY

Special Chemicals Division • 1000 Widener Building, Philadelphia 7, Pa.

New York • Chicago • St. Louis • Pittsburgh • Cincinnati • Wyandotte • Tacoma • Portland, Ore.

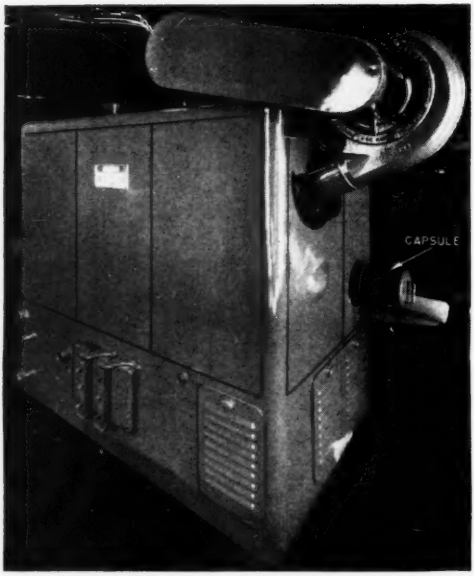


Fig. 2—This automatic inclined rotary washing machine incorporates a heated air blow-off for drying parts as they leave the machine. The wire mesh capsule shown at the right is used in cleaning small and very thin parts. (*Photo courtesy Howard Engineering and Manufacturing Co., Cincinnati, Ohio*)

matic washing machines, small parts are quite often processed in special wire-mesh capsules. One of these capsules can be observed in connection with the automatic inclined rotary washing machine shown in Fig. 2. This type of machine is designed so that the work enters the unit at a relatively low level. The work, in being rotated and tumbled in the cleaning solution, is carried upward through an inclined drum and discharged at a higher point than that at which it entered the washer. Such machines are especially designed for production line work, for they can receive work from a chute or conveyor and, since they elevate the work while cleaning it, can discharge it into another chute for delivery to a table, conveyor belt, or the next operation.

Armstrong Booklets. Two booklets entitled "Armstrong's Insulating Fire Brick and Refractory Cement" and "Engineering Problems That Have Been Solved with Armstrong's Insulating Firebrick" have been prepared by the Building Materials Division, Armstrong Cork Co., Lancaster, Pennslyvania.

The booklets contain descriptions of the various types and special shapes of Armstrong's Insulating Firebrick, the physical properties of the brick, charts of heat loss and storage at various furnace temperatures, and a guide to application of the brick. Also included are descriptions of Armstrong's Refractory Cements. Copies free upon request.

Micromax Model C Indicator Controllers for precisely controlling and indicating the temperature of ovens, kilns, furnaces, baths, and so on, are featured in an eight-page catalog published by the Leeds & Northrup Co., 4934 Stenton Ave., Philadelphia 44, Pa. The catalog lists complete specifications in easy-to-use tabular form for all Model C controllers and includes illustrations showing installation and interior views of the instruments. In addition, the standard ranges for which the Model C controllers can be supplied are listed. Copy of Catalog ND44(3) free upon request.

"Maintenance Check Chart for Electrical Equipment" is the title of an inspection chart issued by the Westinghouse Electric Corporation as an aid to preventive maintenance. The check chart outlines inspection procedures for motors, control equipment, lightning arresters, wiring, fuses, and transformers. Copies of the Maintenance Check Chart may be obtained free by writing Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pennsylvania.

GARMENT HANGERS

"TAILORED" WITH *Claremont Flock*

ACHIEVE THAT CUSTOM LOOK!

Used decoratively on packages, bottles, displays, etc., or as protective finishes and insulation on industrial products . . . CLAREMONT FLOCK offers many advantages!

A Well-Suited Combination of Aluminum and Flock

Light-weight, aluminum suit and coat hangers, finished with an all-over surface coating of colorful Claremont Flock, attain that "New Look" . . . possess greater sales appeal.

Available in 18 assorted shades and colors, Claremont Flock is quickly and economically applied to any shape or surface. For the answer to your finishing needs, we suggest you check the possibilities of Claremont Flock (cotton, rayon, wool). Inquiries invited!

CLAREMONT WASTE MFG. CO.
NEW HAMPSHIRE

The Country's Largest Manufacturer of Flock

NEWS of the Industry

Udylite Representative Appointed

Appointment of William Young as Udylite representative covering the Cincinnati and Southern Ohio territory has been announced by L. V. Nagle, vice president and sales manager of The Udylite Corp., Detroit 11, Mich. Mr. Young, who will work out of the Cleveland office, has been with Udylite since 1944 as an equipment engineer. During a 15-year period prior to this time, he was associated with Chrysler Corporation in Evansville, Indiana, the Great Lakes Steel Company in Detroit, and National Tube Company in Lorain, Ohio.

William Young

Pennsalt to Build New Plant

The Pennsylvania Salt Manufacturing Company has announced that it will build a new fluorine chemicals plant near Paducah, Kentucky, to make possible the expanded production of fluorine chemical products. Leonard T. Beale, Pennsalt president, stated that the first unit of the new plant is expected to be completed by February 1949. The plant will include single and multi-story buildings and will occupy approximately 10 acres of a 500-acre tract. The first phase of the new plant's operation will be devoted to the production of hydrofluoric acid.

James McWhirter, formerly superintendent of the Natrona, Pennsylvania plant, will supervise construction of the new plant and will be superintendent of the new operation.

Industrial Safety Products Division Established

The Watson-Standard Company has established an industrial safety products division located in the Clark Building, Pittsburgh 22, Pennsylvania, to promote a three-point program for safety in industry. This program is said to include cooperation with safety organizations, extensive research directed at the development of paints and finishes minimizing industrial hazards, and educational promotion.

Tenth President for Du Pont

Crawford H. Greenewalt has become the tenth president of E. I. du Pont de Nemours & Co., Inc., while Walter S. Carpenter, Jr., previous president, has been elected chairman of the board. Mr. Carpenter's resignation as president and his designation as chairman of the board followed the retirement of Lammot du Pont from the latter post.

In addition to assuming the presidency of the company, Mr. Greenefalt has become chairman of the Executive Committee, of which he had previously been vice president, and a member of the Finance Committee. Mr. du Pont will continue as a member of the board while Mr. Carpenter retains his membership on the Finance Committee.

Walter J. Beadle, a vice president and member of the board, has resigned as treasurer of the company and has been elected to membership on the Executive Committee. T. C. Davis, who had been first assistant treasurer, has been elected treasurer to replace Mr. Beadle.

Kelite Sales Offices

The Midwest Division of Kelite Products, Inc., manufacturer of industrial chemical cleaning materials, has opened sales offices in Columbus with J. F. Riley as manager, and in Cincinnati with J. T. Nolan as manager. Other Kelite Midwest Division offices are located in Minneapolis, Fond du Lac, Milwaukee, Rockford, Aurora, Chicago, South Bend, Indianapolis, Cleveland, Detroit, Kalamazoo, Grand Rapids, Peoria, and Lansing.

Pennsalt Names Cox Assistant Secretary

Warner R. Over, secretary and treasurer of the Pennyslvania Salt Manufacturing Company, has announced the appointment of Thomas W. Cox as assistant secretary of the company. The appointment of Mr. Cox follows the retirement of U. Grant Beath, assistant secretary and assistant treasurer, after 47 years of service with the company.

Mr. Cox, who joined Pennsalt in 1903, has been an assistant treasurer since September 1944. He will continue as an assistant treasurer in addition to assuming his new post.

Stanley L. MacMillan, who is in charge of cost accounting, has been appointed an assistant treasurer, and Joseph Doherty has been appointed credit manager of the company. Mr. Beath had also functioned as credit manager. E. J. Harrington, Jr., an assistant treasurer, will act as manager of the Sales Accounting Division.

Cowles Distributor Appointed

The Cowles Detergent Co., 7016 Euclid Ave., Cleveland 3, Ohio, announces the appointment of Sessions-Gifford Co., Inc. of Providence, Rhode Island and Boston, Massachusetts as distributor of the complete Cowles line of alkaline and emulsion solvent type metal cleaners to the metal-working industries of the New England states. The Sessions-Gifford Company will maintain a complete stock of Cowles metal cleaners at convenient locations in this area and will provide technical service. The Cowles Metal Cleaner Laboratory in Cleveland will serve all Sessions-Gifford customers.

Something NEW! Volatile Solvent

CARBON MET

A

HALOGENATED AROMATIC HYDROCARBON

U.S. Pat. No. 2318842

A specific replacement for toxic Carbon Tetrachloride

Out and out metal dry cleaning solvent and degreaser in ready-to-use "Handy Kit" containing Patented dip and drier basket.

- Quick Cutting solvent against stubborn dirt and grease.
- Non-Explosive and relatively non-toxic.
- Non-Corrosive to metals.
- Fast, clean evaporation.
- Non-Ionic . . . ideal for degreasing and cleaning electrical parts.

MUCH FASTER CUTTING THEN "CARBON TET" . . .

CAUSES NO RUSTING . . . LEAVES NO FILM

Sold by industrial jobbers everywhere. Shipped "*Prepaid*" Express, if your jobber is out of stock.

CURRAN CORP.

Mfg. Chemists

LAWRENCE, MASS.

Whatever your problem in finishing zinc or cadmium, there's an Iridite* to do the job. Iridite, a quick-dip, chemical treatment, offers you these three advantages:

1. EYE APPEALING FINISH . . .
On plated parts Iridite forms a long lasting, sparkling *bright* finish that *stays bright*, even after handling, storage, exposure. On all surfaces, Iridite can be used to produce a variety of colored finishes.

2. RUSTPROOFING . . .
Resistant to the attack of water, gasoline, and ordinary corrosive conditions, Iridite provides the ideal *final finish* for all zinc and cadmium surfaces.

3. BASE FOR PAINT . . .
On any zinc or cadmium surface that must be painted, Iridite insures a better finishing system because the coating improves initial paint adherence, blocks corrosion *under* paint, blocks metallic soap formation *between* paint and metal.

Tell us the type of finish you need for zinc or cadmium — let us tell you how Iridite can help. For information and samples, write to:

ALLIED RESEARCH PRODUCTS, INC.
301 Chemical Building
4004 E. MONUMENT ST. • BALTIMORE 5, MD.
Manufacturers of
IRIDITE
DISTRIBUTORS IN PRINCIPAL INDUSTRIAL AREAS
*REG. U. S. PAT. OFF.

Appointed Director

Edgar W. Harris, recently appointed director of sales, Darco Corporation, has been elected a member of the board of directors at a meeting of the board in Wilmington, Delaware, January 28, 1948. Mr. Harris will continue to have his headquarters at the company's general sales office in New York.

Du Pont Names West Coast Sales Manager

R. E. Troutman, manager of the Du Pont Company's pigments sales office in San Francisco, has been appointed West Coast sales manager with headquarters in Los Angeles. He replaces Dr. Joseph Shrawder, Jr., who is being transferred to the Wilmington, Del., headquarters of Du Pont, as manager of technical sales. R. P. Enslin, salesman in the company's Western District office in Chicago, was named manager of the San Francisco office to take the place of Mr. Troutman.

Mr. Troutman has been manager of the San Francisco office since May of this year, having gone there from Houston, Texas, where he was manager of Du Pont's Southwestern sales office for pigments. He had a broad background in the linoleum and paint industries and ten years of experience in the application of pigments in these industries prior to taking charge of the Houston office in 1944.

Mr. Enslin has been engaged in pigments sales in the Chicago office since 1935. Before transferring to sales, he worked as a chemist in pigments research for the company.

Dr. Shrawder is moving to Wilmington to take over a newly-created post. As technical sales manager, he will direct the sales service laboratories at Newport, Del., for white pigments and Newark, N. J., for color pigments. He has been in the Los Angeles area since 1938 as a technical service representative. He was promoted to manager of West Coast sales January 1, 1947, and was a research chemist for pigments before transferring into sales.

The company also announces that William J. Lawton and James C. Betty will assume duties as salesmen in the Chicago office. Both men go to Chicago from the company's Newark plant, where Mr. Lawton has been working as a chemist on dry colors and Mr. Betty has been working as a production foreman.

GRIND POLISH SHAPE CHAMFER DEBURR SQUARE CONTOUR BEVEL SHARPEN

with a Hammond of KALAMAZOO

ABRASIVE BELT "50"

MODEL 50-C
COMBINATION

Place these "Time Savers" in your polishing dep't., machine shop, tool room, pattern shop, assembly line, maintenance dep't., etc. You will be amazed at their speed and efficiency in doing grinding, polishing, deburring and clean up jobs; better, faster and at lower cost. The HAMMOND 50's are available in Bench, Floor or with Self Contained Dust Collector combinations.

WRITE TODAY FOR BULLETIN NO. 319.

Hammond Machinery Builders INC

1622 DOUGLAS AVENUE • KALAMAZOO, MICHIGAN

Appointed Assistant Sales Manager

The Egyptian Lacquer Manufacturing Company has announced through its director of sales, Hugh C. Crawford, the appointment of Philip H. Beach as assistant sales manager, with headquarters at the company's offices in South Kearny, New Jersey. Mr. Beach comes to his new appointment with a wealth of experience in the sales field, having been a representative in the New England territory for many of his 16 years of service with Egyptian.

Mr. Beach will be replaced in the New England territory by Garrett Hiers, Jr., who formerly handled the Toledo, Ohio territory. Mr. Hiers' successor in Toledo will be Gordon Yost, who was formerly purchasing agent of the Toledo Scale Company.

Names Mitchell Assistant Vice President

Y. F. Hardcastle, vice president in charge of manufacturing for the Pennsylvania Salt Manufacturing Company, has announced the appointment of William F. Mitchell, superintendent of the Wyandotte, Michigan plant for the past three three years, as assistant vice president.

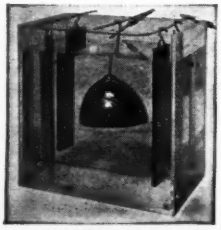
A graduate of the Georgia School of Technology with a B.S. degree in mechanical engineering, Mr. Mitchell joined Pennsalt in 1936 as an engineer in the technical service division at Philadelphia. In 1939 he was transferred to the manufacturing department's central engineering division and in 1943 was appointed assistant works manager. He served in that capacity until January 1, 1945, when he was named superintendent at Wyandotte.

Sommers Named West Coast Director

George R. Sommers, formerly Pacific Coast manager of lighting products for Sylvania Electric Products, Inc., has been appointed director of sales for all product divisions of the company in that area, according to an announcement by Robert H. Bishop, vice president in charge of sales. In his new capacity Mr. Sommers will be responsible for directing all sales activities, distribution policies, and merchandising programs for the West Coast territory. Reporting directly to Mr. Bishop, he will work closely with the divisional and product sales managers, radio and lighting products field representatives, and general sales and merchandising managers to coordinate operations of the entire sales organization in this region.

George R. Sommers

Mr. Sommers, who joined Sylvania Electric in 1940 as a lighting fixture specialist, has been Pacific Coast sales manager of the company's Lighting Division for the last three years. Previously, he organized and developed the Washington, D. C. sales area where he began a policy of decentralizing sales activities, a plan later put into effect nationally by the company. He also originated the Sylvania Fluorescent Maintenance Plan in the Capitol territory. This plan was also adopted nationally by the company.



HIGH TEMPERATURE LUCITE PLATING TANKS for LABORATORY and PRODUCTION PLATING

Singleton tanks are made of high temperature Lucite to give unlimited life, resistance to all aqueous acids with no contamination even when changing from one bath to another, ruggedness, heat and electrical insulation, and transparency.

SEE THE BATH IN ACTION!

Our Singleton Production Tank, a Lucite tank within a steel tank, is the ideal, permanent answer to your plating problems at no higher cost. *LINERS FOR YOUR PRESENT TANKS.*

Everything in Plastics for the Platers.

SINGLETON COMPANY, • 9823 Lorain Ave., Cleveland 2, Ohio, Woodbine 9056

NAME YOUR FINISHING PROBLEM; We will name the "SCOTCH" TAPE that will simplify and shorten it

Masking glass and plastic for sandblasting; protecting metal, glass, plastic, etc., during finishing and assembly; splicing many materials, from rugs to paper—these and many more finishing operations are completed in less time, for less money, with the aid of quickly applied, quickly removed "SCOTCH" Masking Tape.

If you have a finishing operation which you suspect is costing more than necessary, a "SCOTCH" TAPE field engineer will call at a word from you and do his best to give you some real help.

REG. U.S. PAT. OFF.

SCOTCH TAPE BRAND

FOR PROTECTIVE MASKING

ANOTHER 3M COMPANY PRODUCT

Made in U.S.A. by MINNESOTA MINING & MFG. CO. St. Paul 6, Minn.

Appointed Branch Manager

The Cambridge Wire Cloth Co., Cambridge, Md., announces that Howard E. Claycombe has been appointed sales engineer in charge of the Chicago office. Mr. Claycombe, who will assume his new duties immediately, will be located at 332 S. Michigan Blvd., Chicago 4, Illinois.

Merchandise Director

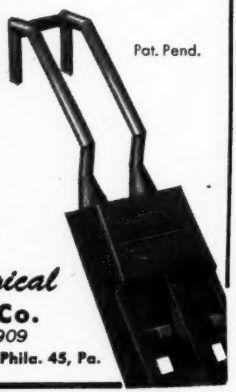
Appointment of Lee Stratton as merchandise director of the Parts Division of the Reynolds Metals Co., Louisville, Ky., has been announced by W. G. Reynolds, vice president and general manager of the Division.

A native of Kansas City, Missouri, Mr. Stratton comes to Reynolds from the Crosley Division of the Avco Manufacturing Corporation in Cincinnati, where he has been serving as domestic sales manager. Prior to his service with Crosley, he was with the Nash-Kelvinator Corporation, serving as manager of several districts for that company. In addition, he also served for two years as manager of the Nash-Kelvinator branch in London, England.

CONDUCTA-CORE

has its Good Points!

▶ Metallurgical engineered the design of both projections and openings to give *the* advantage in Chromium Plating. The "good points"—projections—break up the gas flow on the front face, eliminating blanket formation. Holes cause gas flow to be diverted to back of anode . . . always free passage of current. For *Oomph* use M Sterling Dated Conducta - Core Lead Alloy Anodes . . . no warp, crack, peel, bend, or scale. Made to serve a long life, they are dated. Write for details.



Pat. Pend.

Metallurgical

Products Co.

Established 1909

35th & Moore Sts., Phila. 45, Pa.

Porcelain Enamel Institute Adopts New Membership Emblem

A new emblem of membership replacing the emblem in use since 1930 has been

Porcelain Enamel Institute Membership Emblem

adopted and is available to members of the Porcelain Enamel Institute, according to Edward Mackasek, managing director.

Advantages of the design, according to Mr. Mackasek, are a bold display of the name of the industry's product, porcelain enamel; the full and proper name of the Institute and a combination of replicas of the Egyptian pyramids with the word "Lifetime" to convey the impression of porcelain enamel's durability.

A.E.S. Industrial Finishing Exposition

An outstanding feature of the 1948 A.E.S. Convention to be held in Atlantic City, N. J., on June 28, 29, 30, and July 1, will be the Industrial Finishing Exposition which will be presented in the huge auditorium of Atlantic City Convention Hall. All of the latest features and engineering accomplishments in the line of equipment most generally used in the plating industry will be displayed by the various manufacturers and jobbers. These features will embody the many new techniques developed in recent years to create better finishes at lower costs.

Included in the Industrial Finishing Exposition will be a plater's exhibit where numerous odd and unusually finished pieces of work will be displayed. These finishes have been created by many skilled platers both in their daily work routine and as a hobby.

68 Years of Continuous Service—Since 1879

Assayed Gold Plating Solutions and Salts

24 K GOLD CONCENTRATE—Liquid concentrate containing gold with conducting salts used for flashing or coloring articles with a 24 K finish.

SPX No. 3 GOLD UNDERCOAT—Liquid concentrate containing gold with other metals and suitable conducting salts. Deposits are harder than fine gold and are used as undercoat on brass, copper, silver and soft soldered work, prior to final finish.

SPX No. 5 PINK GOLD—Liquid concentrate containing gold with other metals and suitable conducting salts. Deposits provide attractive, uniform pink color over a wide range of operating conditions.

POTASSIUM GOLD CYANIDE SALTS—(41%, 46%, 50% and 67.5%)—Troy or Avoirdupois. Bottled in Quantities desired.

RHODIUM SOLUTIONS—We distribute the internationally known Johnson-Matthey Rhodium—a precious metal of the platinum group that deposits a brilliant white lasting finish at low cost.

Robinson also makes a complete line of liquid gold concentrates in a variety of colors for all specific needs. The gold content of each bottle is "Robinson Certified" and plainly marked on each label. All liquid gold is sold by the Troy ounce (31.103 grams) which compares with Avoirdupois ounce (28.350 grams).

U. S. GOVERNMENT TREASURY GOLD — All Robinson gold cyanide salts and liquid concentrates are made from the highest quality chemicals and U. S. Government treasury gold.

A. ROBINSON & SON

"Precious Metals in all Forms Bought and Sold"

131 CANAL STREET NEW YORK 2, N. Y.

CAnal 6-0310—0464

Named Technical Sales Representative

The Zapon Division of the Atlas Powder Company has named K. M. Anderson as technical sales representative. Starting with the Roxalin Lacquer Company as sales representative in New York City and Long Island, Mr. Anderson has been in the industrial finishing field since 1937, with the exception of two years spent with the 5th Amphibious Forces in New Guinea.

Southern Machinery and Metals Exposition

The Third Southern Machinery and Metals Exposition will be held at the Municipal Auditorium in Atlanta, Georgia, April 5-8, 1948. Visiting executives will be able to see stainless steel products, corrosion resistant materials, gages and precision instruments, material handling equipment, welding equipment, and various machines and tools in actual operation. Plant tours of manufacturing plants located in the Atlanta area will be held concurrently with the Exposition.

START RIGHT!
INSURE A PERFECT FINISH

DETROIT
Handy 'Tac' Rags
(Trade Mark Reg.)

Remove all Dust, Lint and Sand Particles from the Surface before Finishing.
Successfully used by leading Industrial Plants for over 11 years.
If your local Paint Dealer cannot supply you, write to Manufacturer.

Detro Sales Co.
414 NORTH SAN PEDRO ST.
LOS ANGELES 12, CALIFORNIA

Metal Finishes Division Manager

Appointment of Norman H. Jasmer as manager of the Metal Finishes Division of the V. J. Dolan Co., 1830-32 N. Laramie Ave., Chicago 39, Ill., has been announced by M. J. Fernan, sales manager. Mr. Jasmer joined the Dolan organization in August 1947. For the preceding 20 years he had been associated with a large Eastern paint manufacturer as Chicago divisional manager. He is a graduate of Northwestern University with a bachelor of science degree in business administration.

Norman H. Jasmer

N.A.C.E. 1948 Conference and Exhibition

The 1948 Conference and Exhibition sponsored by the National Association of Corrosion Engineers will be held Monday through Thursday, April 5-8, at the Hotel Jefferson, St. Louis, Mo. The four-day session will include an extensive technical program and All-Corrosion Exhibition.

The technical program will consist of ten symposia at which approximately forty papers on corrosion, its causes, and methods for combating it will be presented by corrosion authorities. The symposium on Protective Coatings for Metals will include the following papers: "Principles of Protecting Metals with Organic Coatings," by A. J. Eickhoff and William E. Shaw, National Lead Co., Research Laboratories, Brooklyn, N. Y.; "Preparation of Metal Surfaces for Organic Finishes," by G. R. Hoover, American Rolling Mill Co., Middletown, Ohio; "Building Organic Protective Coatings to Special Requirements," by K. G. Compton, Bell Telephone Laboratories, Inc., Murray Hill, N. J.; and "Organic Linings for Chemical Equipment," by Kenneth Tator, Industrial Lining Engineers, Inc., Sewickley, Pennsylvania.

At the All-Corrosion Exhibition, various manufacturers will present displays of the latest materials, methods, and equipment for combating corrosion.

IF YOUR PRODUCT NEEDS

chemical resistance

YOU NEED A *Watson-Standard* FINISH

You can free yourself from worrying about the effect of chemical reaction on your product by having Watson-Standard create for you a coating which provides complete chemical resistance. Watson-Standard laboratories are at your service, offering you a finish which meets your exact needs, not just a standardized product. We invite you to discuss your problem with us in detail.

TOUGH JOB HEADQUARTERS

℞ Prescription Finishes

Give us your metal coating problem. We guarantee you an answer based on your conditions, and not just a standardized formula.

THE WATSON-STANDARD CO.

Manufacturers of

PAINTS • VARNISHES • INDUSTRIAL FINISHES AND LITHOGRAPH COATINGS

FACTORY AND GENERAL OFFICES: PITTSBURGH, PA.

WAREHOUSES: BOSTON, BUFFALO, DETROIT, NEW YORK

H-VW-M Transfers Norton

Robert M. Norton, who has been the New York State Manager of the Hanson-Van Winkle-Munning Company, has been transferred to the company headquarters in Matawan, New Jersey, where he will be engaged in sales promotional activities in the sale of electroplating and polishing equipment and supplies.

Pollacek Joins Power Equipment Company

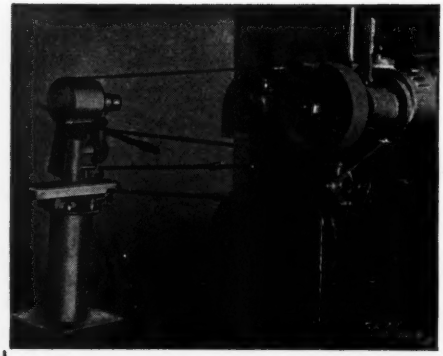
Edgar H. Pollacek, formerly with the Federal Telephone and Radio Corporation, Newark, New Jersey, has been appointed advertising and sales manager for the Power Equipment Co., Detroit, Mich., manufacturer of closely controlled rectifier equipment. Mr. Pollacek's background, which includes years of sales activity on various types of rectifiers as well as rotating machinery, will be utilized in formulating the policies of the expanding promotional and sales program now being planned by the Power Equipment Company.

Moves to New and Larger Quarters

Frederic B. Stevens, Inc., Detroit, Mich., distributor of foundry and metal-finishing equipment and supplies, full and semi-automatic plating machines, and buffing and polishing lathes, announces the removal of its general offices and warehouse to new and larger quarters at 1800 18th Street at Vernor Highway West, where the company will enjoy greatly expanded facilities, with more than double the floor space previously occupied.

The new building, which is of steel and reinforced concrete construction and three stories high, is located directly back of the Michigan Central Railroad Station. Another building which adjoins it is now being altered and will, within a few months, be operated as a buffing composition factory.

Trirex Paint Heater. Bede Products Inc., Dept. PF, 3309 W. 118th St., Cleveland 11, Ohio, has published a bulletin describing the construction and operation of the Trirex Paint Heater. Copy free upon request.



DATA: Easily reversible to R.H. or L.H.; 5" side adjustment on Needle Bearings with Remote Control; Hydraulic Shock Absorber lowers weight slowly; easily tracks ¾" to 6" belts from Remote Control; Large Bearings Mounted in Arm for Lower Bearing Speeds, sealed for life with Non-Friction Grease Seals; Large Belt Length Adjustment; Counter Weighted for Steady Accurate Pressures.

DUAL REMOTE CONTROL*
MAKES THE
NIEDERST
Back Stand Idler
— the most versatile in the field!

*Remote Control for Operation Ease—idler pulley arm swings on a turret enclosing angular adjustment mechanism. Levers conveniently located on lathe allow control of both angular and wide range of lateral adjustments from operator's normal working position.

A host of other innovations achieved by the NIEDERST BACK STAND POLISHER, have earned it the title of "World's Workingest Idler." For better, faster, smoother abrasive belt polishing — *investigate NIEDERST now!*

Nationally Distributed by Matchless Metal Polish Co.

NIEDERST COMPANY
3506 S. MICHIGAN AVE., CHICAGO 15, ILL.

You can produce on any material the following surface finishes:

FELT - SUEDE LEATHER - MOHAIR VELOUR - VELVET - CARPET

FUNCTIONAL USES

Used in the auto, airplane, radio, electrical, phonograph, ceramics, furniture and many other industries for surfacing all sorts of materials to provide

TEMPERATURE INSULATION • SOUND DEADENING • INTEGRAL GASKETS • SHOCK ABSORBING SURFACE • NON-MAR SURFACE • NON-GLARE SURFACE

DECORATIVE USES

Applied in various lengths and colors to wood, paper, cloth, metal, etc., the following effects are produced—

FURNITURE UPHOLSTERY • SUEDE LEATHER • INTERIOR AND DRAPERY FABRICS • VELVET • VELOUR • MOHAIR • CARPET

with these patented and trademarked Rayco specialties:

FELT AND SUEDE SURFACE

*"Raymix"—a flock of rayon fibres, trademarked under U. S. No. 427949 to produce a suede effect of utmost realism on any surface.

*"Kingcote"—a cotton flock trademarked under U. S. No. 423572, producing a suede effect at minimum cost.

MOHAIR, VELOUR AND VELVET SURFACE

"Raycote"—a flock composed of uniformly cut rayon fibres to produce on any surface a pile effect such as velvet, plush, or velour. Made under U. S. Patent No. 2014947.

SYNTHETIC CARPET

"Harecote"—a flock composed of animal fibres, produces a durable carpet or rug material.

Request Free Color Card of Actual Samples

**Registered Trademark*

Rayon Processing Co. of R. I., Inc.

PIONEER PRODUCERS OF SURFACE COATING FLOCKS

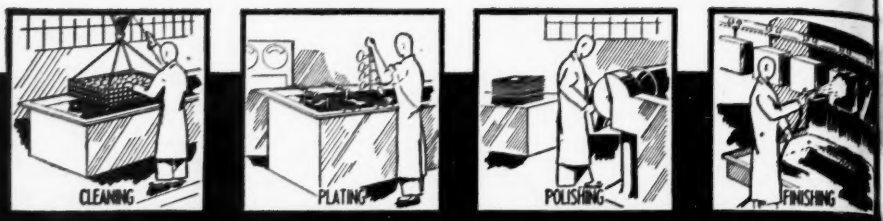
65 TREMONT STREET • CENTRAL FALLS, R. I.

POLLAK PAINT CO.
715 Main St.
Buffalo, N. Y.

LAMBERT-NEW ENGLAND CO.
79 Sudbury St.
Boston, Mass.

H. R. MEININGER CO.
409 16th St.
Denver, Colo.

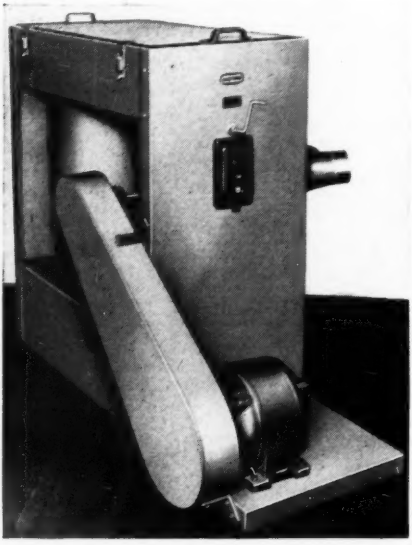
J. GORDON SMITH CO.
3901 Main St.
Dallas, Texas



New Equipment and Materials

"Dustkop" Model 11D50 Dust Collector

The addition of a high capacity dust collector for operation on 25-cycle power to its line of "Dustkop" industrial type self-contained dust collecting equipment is announced by the Aget-Detroit Co., 207 Main at Washington, Ann Arbor, Mich.



"Dustkop" Model 11D50 Dust Collector

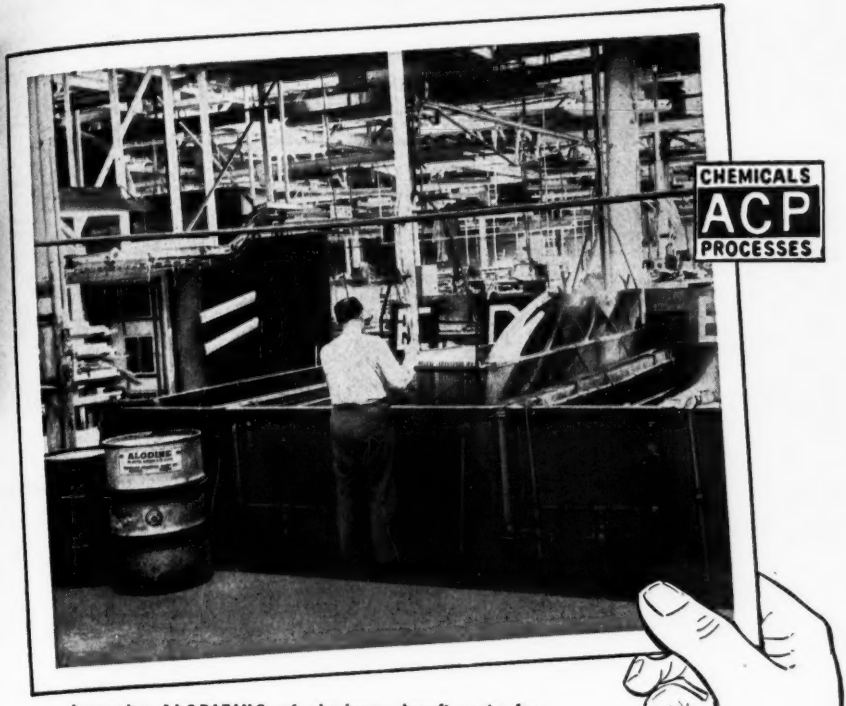
Designated as the Model 11D50, the unit incorporates the use of a special motor mounting for an overdrive so that the normal fan speed will be maintained even though the collector is operated on 25-cycle power. In this manner, the unit is able to develop a suction in excess of 1,300 c.f.m. on a 16-inch diameter inlet (600 c.f.m. on double 4-inch inlets) with a 3-inch water lift.

The dust so removed by suction at the hood of the grinder, polisher, buffer, and so on, first passes through a cyclone separator contained in the unit, which separates a large percentage of all dust particles from the air. The particles separated are deposited in a drawer which can be readily removed from the end of the collector. The partially cleaned air then rises through the cyclone separator and is subjected to a second-stage cleaning by means of a spun glass filter. The cleaned air is then returned to the working area so as to conserve heat.

The spun glass filter material comprising the top of the Model 11D50 is contained in an expanded metal frame and can be quickly and economically renewed. A shaker handle extending from the side of the unit permits regular shake-down of the filter to prolong its useful life. A motor starting switch is likewise conveniently mounted on the side of the unit.

The Dustkop Model 11D50 Dust Collector occupies a floor space of 22 x 53½ inches and has an overall height of 42 inches. The unit is available with or without a motor. The shipping weight of the Dustkop unit with a motor is approximately 370 pounds.

PICTURE OF PROGRESS



Immersion ALODIZING of aluminum aircraft parts for increased corrosion resistance and lasting paint adhesion

Photograph by courtesy of Stinson Division, Consolidated Vultee Aircraft Corporation, Wayne, Michigan.

CHEMICALS ACP PROCESSES

RUST PROOFING AND PAINT BONDING
Granodine *
Duridine *
Alodine *
Lithoform *
Thermit-Granodine *

RUST REMOVING AND PREVENTING
Deoxidine *
Peroline *

PICKLING ACID INHIBITORS
Rodine *

Alodizing ALUMINUM ASSURES CORROSION RESISTANCE – TOUGH PAINT BOND -- DURABILITY – BEAUTY

The new ACP process using "Alodine"* takes but 2 minutes by immersion—or 30 seconds by spray in a power spray washer. No electricity—no high temperatures—no elaborate equipment —no special skill, necessary.

"Alodine" imparts maximum protection to either painted or unpainted aluminum—provides a durable bond for tenacious finish adhesion.

Alodizing is simple, effective and economical—in large or small, intermittent or continuous production. Additional data available on request.

Pioneering Research and Development Since 1914

AMERICAN CHEMICAL PAINT COMPANY

AMBLER, PENNA.

Manufacturers of Metallurgical, Agricultural and Pharmaceutical Chemicals

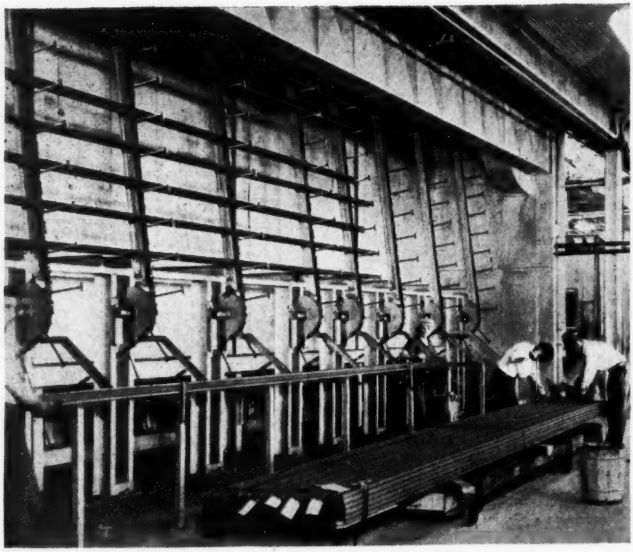


Illustration showing unloading side of nine-strand Ace Vertical - Tower Oven Conveyor System

Ace Vertical-Tower Oven Conveyor System

To meet the need of plants requiring additional drying or baking capacity where adequate floor space is not available, Ace Conveyor Industries, Inc., 134 Woodmere Ave., Detroit 9, Mich., has designed a vertical-tower oven conveyor system consisting of a conveyor and Burdett-equipped gas-fired oven through which work that has been painted is transported for baking or drying. The tower can extend through the roof of the plant if necessary and the conveyor is adaptable to meet individual plant requirements.

The accompanying illustration shows the Ace Vertical-Tower Oven Conveyor System installed in a plant engaged in the manufacture of straight structural steel pieces. The conveyor system is used to dry the rust-proofing coating of red oxide paint in which the steel is dipped prior to entering the conveyor system. From the dipping operation, the structural steel is transported on a roller conveyor and then fed automatically onto an entry conveyor which is timed with the vertical-tower oven conveyor so that each piece of structural steel is picked up at the proper time by the extended pins on the vertical-tower oven conveyor chain. The pieces are conveyed up one side of the tower, through the baking cycle, turned over at the top, and conveyed down the other side. The oven is an integral part of the tower and is designed so as to provide the required paint baking cycle.

Shelltone Finish

The Industrial Finishes Division, Central Paint & Varnish Works, Inc., 59-69 Prospect St., Brooklyn 1, N. Y., has announced the development of a baked enamel finish designated as Shelltone, which is said to be suitable for finishing all types of metal products. According to the manufacturer, Shelltone may be sprayed in one application without a prime coat and/or "spattering" thinner, and will "pattern" as it is sprayed to produce a smooth uniform finish which does not collect dust.

The formulation of Shelltone permits baking at cycles ranging from ½ hour at 225 deg. F. to 3 minutes at 350 deg. F. It dries quickly with a high degree of hardness on castings as well as light gauge metals, covering spot welds and similar markings.

Shelltone is available in a wide range of colors for use in finishing all types of equipment.

"Mirrofilm" Plastic Coating

A clear plastic protective coating known as "Mirrofilm" has been announced by the Wype Corp., 2214 Dolman St., St. Louis, Mo. According to the manufacturer, Mirrofilm may be easily applied to metal and wood surfaces with a clean, lint-free cloth and dries quickly, providing a brilliant mirror-like finish that resists chipping, blistering, peeling, flaking, chalking, or scaling.

For Buffing and Polishing

Turn 'em out *FAST*
***...with a* VANOTT!**

A fine, new way for the hand-work shop

●

A BETTER way for the shop already buffing by machine

●

Write for further information or send samples for our estimate

● YOU can lick mounting postwar costs with the *volume production* you get from a Vanott 8-Spindle Buffing Machine.

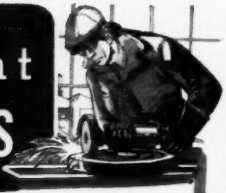
Not only does this fine-quality Vanott machine increase production two or three times over handwork, but it also brings you maximum savings in buffing . . . the operation that often costs more than all others combined.

You'll find that a Vanott 8-Spindle Buffing Machine does the job better, too, turning out articles of almost any shape, up to 3" diameter (or 7" when using four spindles) with an excellent overall finish obtained by *uniform pressure* against the buffing wheel.

We'll be glad to make a production-cost estimate based on samples of your work in rough and finished condition. No obligation, of course.

VANOTT MACHINE CORP.
222 Colgate Avenue
Buffalo 20, New York

Edmont
GLOVES

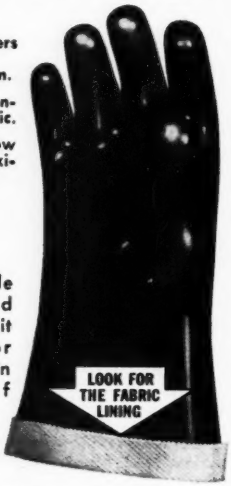


made to take the tough, daily grind!

For product finishing and preparation, there's an Edmont fabric-lined, rubber-coated glove to fit your needs. Many years of experience in industry proves they outwear ordinary gloves many times over. Check these principal features:

- Curved fingers molded in natural position.
- Soft high tensile inner fabric.
- Uniform narrow seams for maximum hand comfort.
- Waterproof dirt-proof, snag-proof.

Sizes available for men and women in knit wrist style or with gauntlet in a variety of lengths.



See your SAFETY EQUIPMENT or INDUSTRIAL SUPPLIER

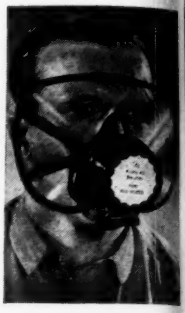
Edmont

Fabric Lined
RUBBER GLOVES

Edmont Mfg. Co., 509 Orange St., Coshocton, O.

AO Plastic Face Shield

The American Optical Co., Southbridge, Mass., has announced a plastic face shield specially designed to be worn in combination with the company's R-1000 and R-2000 respirators. Said to be light in weight, durable, and easily attached to the respirator, the shield is designed to protect eyes and face from the impact of foreign particles. The outer edges of the shield are protected by a vinyl plastic binding.



AO Combination Plastic Face Shield and Respirator

The design of the shield makes it useful for respirator users who must wear prescription glasses and who still require lightweight, comfortable eye and face protection.

Trirex Paint Heater

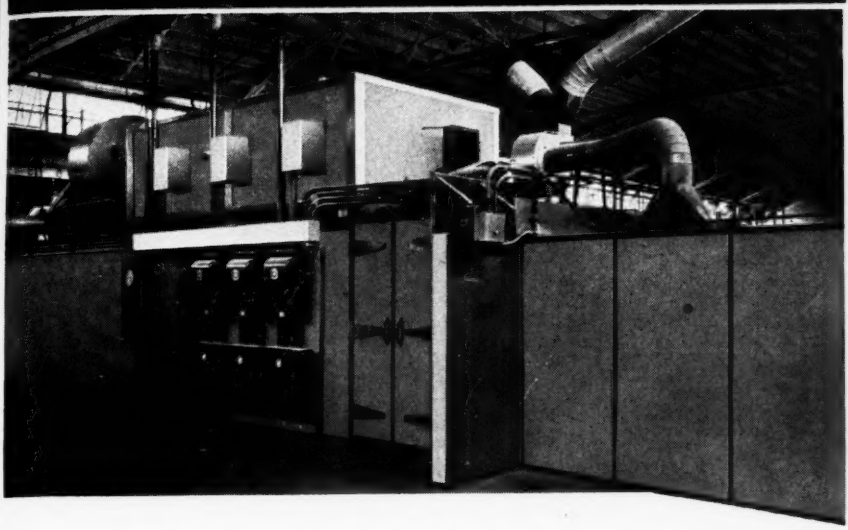
Bede Products Inc., Dept. PF, 3309 W. 118th St., Cleveland 11, Ohio, has announced the development of the Trirex Paint Heater to be used in heating paint to a temperature between 100 and 200 deg. F. just before the paint is sprayed. The heater is an electrically-heated, thermostatically-controlled water tank through which the paint flows in a copper coil.

According to the manufacturer, the use of the paint heater reduces the viscosity of the paint, with a resulting improvement in spraying characteristics and in final finish.

Mitchell-Bradford "Black Magic" Zinc Black Process

Known as "Black Magic," a process for applying an attractive black finish to zinc plate, zinc alloys (die castings), and cadmium plate is announced by The Mitchell-Bradford Chemical Co., 2446D Main St., Stratford P. O., Bridgeport, Conn. The finish is applied by immersion of the work in the zinc black solution which reacts chemically with the zinc or cadmium sur-

KIRK AND BLUM "*Miracle*" OVEN HELPS PRODUCE "*Miracle Walls*"



DRYING TIME CUT 23½ HOURS

at **TYLAC COMPANY, MONTICELLO, ILL.**

Three other oven manufacturers said "it can't be done"! KIRK & BLUM Engineers said ***It could be done***—DID IT—and PROVED IT! Now, drying time has been reduced from 24 hours to 30 minutes. Wall board is dried horizontally rather than vertically to secure even distribution of finish.

Installation of this modern KIRK & BLUM Oven, plus automatic paint spraying and conveying equipment, has resulted in a 50% production increase in less than ½ the floor space . . . has enabled the manufacturer to hold prices at pre-war levels! Gain by KIRK & BLUM's 40 years of experience.

Write for catalog, "Industrial Ovens."

THE KIRK & BLUM MFG. COMPANY
2816 Spring Grove Ave.
Cincinnati 25, Ohio

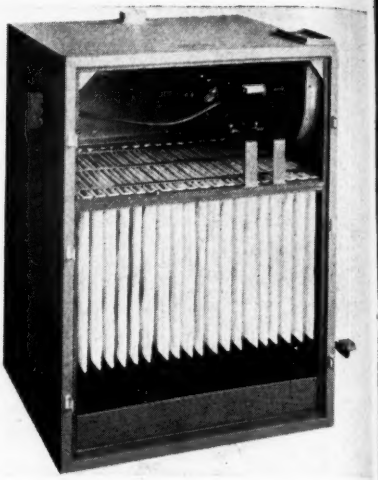
KIRK AND BLUM
INDUSTRIAL OVENS

face to produce a glossy black finish. A reaction is said to occur in a work immersion time of from one to two minutes for zinc and zinc alloys and three to five minutes for cadmium plate.

The finish produced by the Black Magic Process is claimed to provide high abrasion resistance; excellent resistance to most alkalis, acids, and organic solvents; an unusually attractive appearance; and a tenacious bond for the subsequent application of paints and enamels. A minimum of tank equipment is said to be required in utilizing the process. If cleaning and rinsing facilities are already available, the user need only install one plain steel tank for the Black Magic Zinc Black solution.

Torit No. 68 Dust Collector

Said to afford the utmost in dust control efficiency, the Torit No. 68 Dust Collector shown herewith, product of the Torit Manufacturing Co., 314 Walnut St., St. Paul 2, Minn., provides a 4-to-1 filter velocity (4 c. f. m. through each square foot of filter cloth). Utilization of the entire area on both sides of each filter is secured by the provision of adequate space between each filter. Copper wire mesh prevents collapsing and distortion under pressure.



Torit No. 68 Dust Collector

The filters are said to be installed in a manner which assures a dust-proof seal through the use of a slotted cast frame into which each filter slips in an individual slot. The felt insulation is affixed to the filter frame rather than to the filter collars.

The Torit No. 68 Dust Collector is said to be particularly useful under conditions requiring equipment providing low filter velocity. The low air volume-filter area ratio is said to ensure maintenance of the original operating characteristics over a long period of time. Minimum filter maintenance and replacement are required through the even distribution of dust-laden air over the available cloth surface.

For Sale

•

Slightly Used

BUFFS

LOOSE AND SEWED
ANY QUANTITY
ALL SIZES

•

MICHIGAN BUFF CO. INC.

3505 GAYLORD AVE.
DETROIT 12, MICHIGAN

Seletron Rectifier

The Seletron Division, Radio Receptor Co., Inc., New York 11, N. Y., has announced a selenium power rectifier which is said to have electrical and design characteristics most frequently required by small manufacturers, laboratories, testing departments, and maintenance departments. The rectifier is available in various ranges of voltage and current so as to meet most user needs.

The New BLACK MAGIC Zinc Black Protects Important Parts

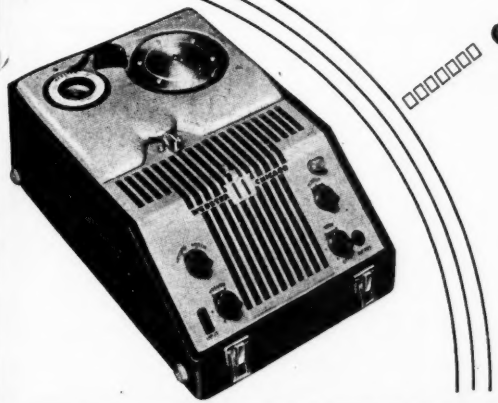
ON THE WEBSTER-CHICAGO WIRE RECORDER

Black-Magic ZINC BLACK is used on the spool of the Webster-Chicago Wire Recorder shown below because it does not build up the diameter and is a good bond for the silk screen painted trade name.

Black-Magic ZINC BLACK on the mandrel resists the abrasion of a felt brake which it engages, affording positive action without revealing bare metal.

Black-Magic ZINC BLACK is the modern treatment for zinc base die castings and zinc fabrications —as an attractive final finish and an effective corrosion and abrasion resistant. It is also an excellent bond for paint, and when so used, it affords full protection for unpainted areas.

Because of these advantages, Black-Magic ZINC BLACK is becoming "standard practice" wherever product sales and service life are important.



Black-Magic ZINC BLACK, used on the take-up reel, resists the abrasion of the magnetic recording wire which rides on the periphery.

Write for the "Black Book" of details on our zinc black and other Black-Magic metal finishes. Also, for a first-hand acquaintance with this zinc black, suggest you send us a product for sample processing without obligation.

MITCHELL-BRADFORD CHEMICAL COMPANY

MODERN METAL FINISHES

2446 MAIN ST., (Stratford) BRIDGEPORT, CONN.

CHICAGO OFFICE: 111 W. Jackson Blvd.

BLACK-MAGIC OXIDE BLACKING SALTS
WITCH-DIP & WITCH-OIL FINAL FINISHES

SILCO *Glass-Base* PROTECTIVE COATING
HEAT TREATING SALTS, CLEANERS, ETC.

"Peelcote" Protective Coating

"Peelcote," a protective coating for metal parts which can be quickly and easily peeled off after it has served its purpose, has been developed by The Watson-Standard Co., 225 Galveston Ave., Pittsburgh 12, Pa. The product is an air-drying coating designed to protect metal parts from scratches, chips, and corrosion during shipment, storage, handling, and some types of fabrication. Applicable by the spray or dip method, the material is said to dry quickly and can be easily and cleanly removed by pulling it off the coated surface.

According to the manufacturer, Peelcote is a vinyl-based coating with complete chemical inertness, and is available in clear transparent or solid hiding black.

"Duratex" Pipe Coating

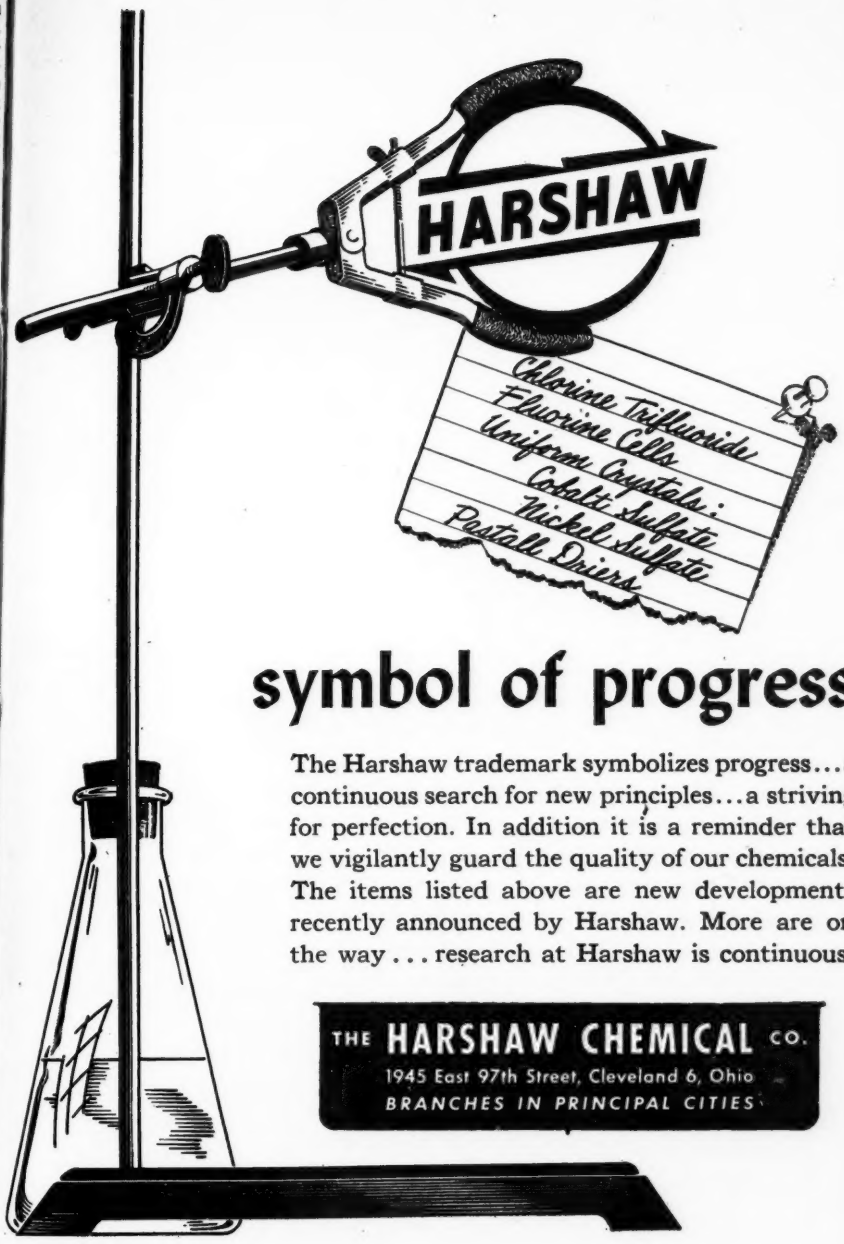
National Petroleum Sales, Inc., 315 W. 9th St., Los Angeles, Calif., has announced a corrosion resistant pipe coating known as "Duratex." The application of this protective coating to gas, oil, and water pipes is said to reduce corrosion due to electrolysis and chemical agents.

According to the manufacturer, Duratex has outstanding impact shock resistance which reduces installation damage to the coating and high ductility so that it can withstand severe earth shock or movement. The high flash and fire point (in excess of 500 deg. F.), in addition to its non-toxic nature, enables Duratex to be easily and safely applied, it is stated. Further properties claimed for Duratex are its ability to withstand repeated reheating without settling out or "coking-up," high bonding characteristics, exceptionally high tensile strength, and excellent resistance to the action of alkalis and soil acids.

"Electro" Cold Paint Stripper

An improved cold paint stripper is now being offered in bulk to the industrial trade under the name of "Electro" by the Allied Finishing Specialties Co., 2637 W. Grand Ave., Chicago 12, Ill. According to the manufacturer, the stripper, which requires no heat and is non-inflammable, is designed to strip paints, lacquers, ena-

DRAWCO & GRAINLOCK
DRAWING COMPOUND & POLISHING-WHEEL CEMENT
two of the oldest names in the field
INDUSTRIAL LUBRICANTS COMPANY
5736 TWELFTH STREET DETROIT 8, MICHIGAN



symbol of progress

The Harshaw trademark symbolizes progress... a continuous search for new principles... a striving for perfection. In addition it is a reminder that we vigilantly guard the quality of our chemicals. The items listed above are new developments recently announced by Harshaw. More are on the way... research at Harshaw is continuous.

THE **HARSHAW CHEMICAL** CO.
1945 East 97th Street, Cleveland 6, Ohio
BRANCHES IN PRINCIPAL CITIES

mels, synthetics, and wrinkles almost instantly and requires no neutralizing action other than a pressure water wash or a thorough wiping operation with a rag.

The Electro Cold Paint Stripper, it is claimed, is non-injurious when used as directed and will not affect aluminum, copper, brass, magnesium, zinc, steel, cast iron, or their alloys in the time required for the removal of the paint film. The stripper is intended primarily for application by the dip method but may also be applied either with a brush or spray. It is said to work satisfactorily on either vertical or horizontal surfaces and to be especially effective on hard-to-remove baked-type finishes.

Vanott Type V-1 Buffing and Polishing Machine

Designated as the Type V-1, an electrically powered buffing and polishing machine designed to handle articles of practically every shape and size is announced by the Vanott Machine Corp., 222 Colgate Ave., Buffalo 20, N. Y. According to the manufacturer, the machine is particularly adaptable to the needs of plants in which many different shapes of parts are to be polished or buffed since it is fully adjustable for height, angle, spindle speed, and stroke (up to 6 inches).

Vanott Type V-1 Buffing and Polishing Machine

The chucks or holding devices used with the Vanott Type V-1 Buffing and Polishing Machine are individually designed to hold the items to be buffed or polished. All vital mechanism of the machine is enclosed to provide protection from abrasive wear. The construction of the unit includes a foot pedal for revolving the head, thus allowing the operator the use of both hands for changing parts.

AMBER FLAKES
for efficient, economical
METAL BURNISHING!

Good lubricating properties... good "body"... ready solubility ... you get these essentials to efficient metal burnishing in generous measure with Amber Flakes.

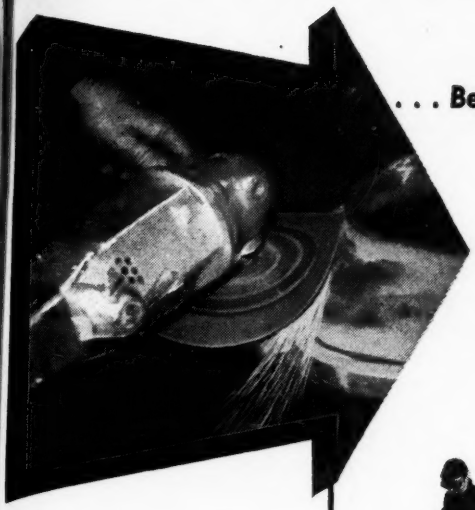
You'll like the performance and economy of this uniformly pure, neutral, high titer soap. Try Amber.

BULK SOAP SALES DEPT.
PROCTER & GAMBLE
CINCINNATI 2, OHIO

Cooper Compound Heater

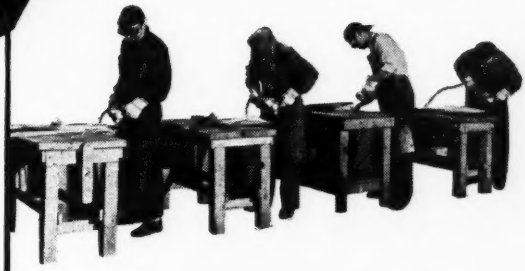
The D. C. Cooper Co., 1467 S. Michigan Ave,. Chicago 5, Ill., announces the development of an electrically heated tank for heating compounds requiring high temperature. The tank, which has a temperature range of up to 500 deg. F., is said to be especially designed for the safe, accurate, and thorough heating of insulating compounds, wax, plastic, rosin, glue, ethyl cellulose, butyrate acetate, and similar compounds.

The Cooper Compound Heater is stur-



. . . Because they constantly deliver

MORE GRINDING PRODUCTION PER DISC



SPEED-WET METALITE FIBRE DISCS

Actual on-the-job comparisons at customer plants testify to the constant increased production of Speed-Wet* Metalite* Fibre Discs. The two illustrations above are typical examples. In the group photo Speed-Wet Discs averaged 5 to 1 times the production of their best competitor. The close-up photo shows a severe contour grinding job where Speed-Wet Discs did 12 to 1 better.

Technically, the answer to this extra production performance of Speed-Wet Discs lies in their all-fibre backing and resin bonding. The all-fibre backing withstands flexing like a steel spring. The heat-set resin bonding resists cutting heat and retards grit-shedding and glazing.

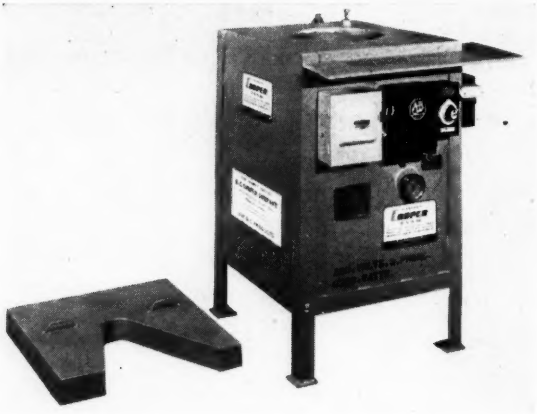
Phone, wire, or write us for a free on-the-job test of Speed-Wet Discs in your own plant.

* *Reg. U. S. Pat. Off.*

BEHR-MANNING • TROY, N. Y.

(DIVISION OF NORTON COMPANY)

QUALITY COATED ABRASIVES SINCE 1872



Cooper Compound Heater

dily made of steel and is electrically welded throughout. A jacket placed around the inner compound chamber contains a special non-carbonizing heat transfer oil which is said to economically transmit heat throughout the compound chamber, thus affording even temperature without scorching and also eliminating cold or hot spots. Between the oil chamber and the outside shell is a layer of tightly packed Rock Wool insulation to retain the heat inside and keep the outside of the tank cool at all times. A large outlet provided in the center of the compound chamber is constructed to eliminate clogging or freezing of the drain when the compound cools. An inlet and drain are also provided for the heat transfer oil, and the tank is equipped with an insulated removable lid. The electric heating elements are situated on two sides and the bottom of the tank between the oil chamber and the outside shell, and are not exposed to either the compound or oil.

Additional features of the Cooper Compound Heater include two thermostats with pilot light, one for controlling the temperature of the compound and the other for controlling the temperature of the oil bath. A stainless steel base thermometer is installed in the oil chamber

PERMAG *removes*

Buffing Compound from Brass

in a pre-soak operation

Precleaning brass by the PERMAG Pre-Soak Process insures removal of every trace of buffing compound, oil, grease, smut and dirt from the surface. This easy simplified process permits the final electrolytic cleaning solution to give the metal a positive chemically clean surface for the final finish. PERMAG cleaner for brass is quick acting and economical in use.
Hundreds of plating shops use the PERMAG Process with utmost satisfaction.

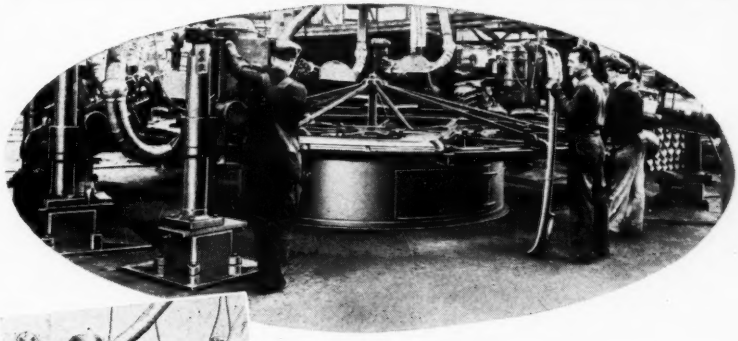
If you have a metal cleaning problem our Technical Service men will be glad to help you. Call on us. No obligation for an interview.

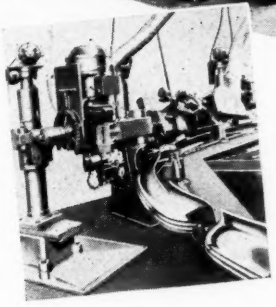
MAGNUSON PRODUCTS CORPORATION

Mfrs. Specialized Cleaning Compounds for Industry
Main Office: 50 COURT ST. BROOKLYN 2, N. Y.
In Canada: Canadian PERMAG Products Ltd., Montreal, Toronto

• FOR HIGH PRODUCTION POLISHING AND BUFFING •

ROTARY AUTOMATICS • SEMI-AUTOMATICS • STRAIGHT LINE AUTOMATICS





ACME CONTINUOUS ROTARY AUTOMATICS

ACME Continuous Automatic Rotaries are engineered to secure and maintain high production at low cost.

The 18 foot rotary bumper polishing and buffing machine illustrated above is equipped with 10 completely adjustable heavy duty heads and has fully demonstrated its production efficiency on work of this type.

The small illustration shows an ACME 20 H.P. adjustable floating head lathe in vertical position. It is equipped with vertical power transverse on column for positioning wheel spindle. Sensitive float and many other universal adjustments give a wide range of adaptability.

SPECIAL MACHINERY AUTOMATIC BUFFING MACHINES

ACME Manufacturing Co.

1645 HOWARD ST. DETROIT 16, MICH.

Builders OF AUTOMATIC POLISHING AND BUFFING MACHINES FOR OVER 35 YEARS

as an additional temperature check. The tank illustrated herewith measures 12 inches in diameter x 24 inches deep on the inside and has a 2½-inch oil chamber. The compound heater is available in standard sizes of 3½, 12, 30, and 60 gallons, with special sizes made to order. Where required, the tank can be equipped with an agitator.

Stantite Spraying Primer No. 66R-3157A

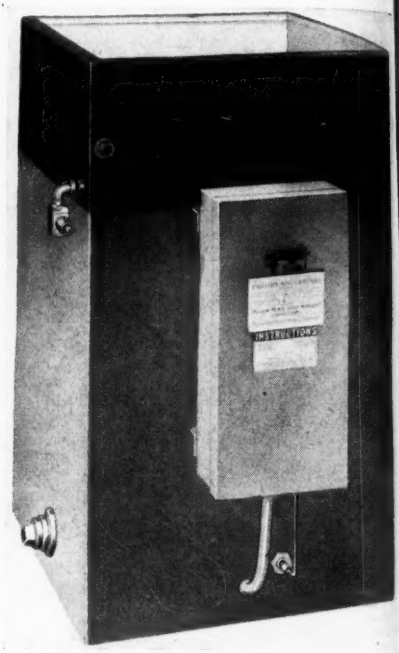
A rust-inhibiting primer designed for use under either air-dried or baked finishes has been announced by The Stanley Chemical Co., East Berlin, Conn. The primer, known as Stantite Spraying Primer No. 66R-3157A, is said to have good adhesion to stainless steel, galvanized iron, zinc, nickel, cadmium, brass, copper, aluminum, and magnesium. Metal surface preparations other than cleaning are said to be unnecessary when Stantite Primer is used.

According to the manufacturer, Stantite Primer dries in a few minutes at room temperature or in one minute under a hot air blast. Baking top coats, including two-coat systems, may be applied over it without impairing the adherence of the primer to the base metal. Top coats of air dry or bake lacquers, alkyds, ureas, melamines, enamels, japans, and paints are said to adhere well to Stantite Primer and show improved resistance to tests such as the conical mandrel flexibility test.

Phillips Electric Vapor Degreaser

The Phillips Manufacturing Co., 3438 W. Touhy Ave., Chicago 45, Ill., has announced an electric vapor degreaser specifically engineered for the production cleaning of small parts. Constructed to provide for maximum economy of operation, this compact unit is designed to remove grease, oil, and other contaminants from the surface of steel parts at an average rate of 400 pounds per hour.

The machine is equipped with a Reso-Kleen sump which permits reclamation of soiled solvent by distillation within the machine during normal operation. Occupying a space 44 inches high, 32 inches long, and 26 inches wide, the degreaser is said to be sufficiently small and light so as to be completely movable to any part of the plant where suitable power and water connections are available.



Phillips Electric Vapor Degreaser

Striplastic No. 320

To prevent the marking or scratching of stainless steel or any highly polished metals during fabrication, assembly, and

For a real good polishing job use

Keystone TURKISH Emery

FRESH SUPPLY AVAILABLE

KEYSTONE EMERY MILLS *Write for Sample* 4316 Paul St., Phila., Pa.

Addressograph DOES IT RIGHT WITH Du-Lite

THE Addressograph, a "household word" in many an office where volume billing, volume addressing, volume accounting is a problem, finishes the myriad of precise, fast-moving parts beneath its handsome exterior with DU-LITE Black Finish.

Not only does DU-LITE provide a lasting, oil-absorptive finish, but the DU-LITE process removes the microscopic burrs that exist even on highly polished bearing surfaces and gives the parts a necessary friction-freeness that permits the high-speed, dependable operation for which Addressograph is famed.

DU-LITE can meet your finishing problem as successfully as it has met Addressograph's. Call or write for descriptive literature. A DU-LITE field engineer will gladly demonstrate what DU-LITE can do for you.

The word, ADDRESSOGRAPH, is a registered trademark of Addressograph-Multigraph Corporation.

THE *Du-Lite* CHEMICAL CORPORATION

100 River Road . . . Middletown, Conn.

so on, The Striplastic Co., 10828 Quebec Ave., Cleveland 6, Ohio, is marketing a strippable plastic designated as Striplastic No. 320. Claimed to provide excellent protection against corrosion and abrasion, the material can be applied by the spray, dip, or roller-coat method and is readily removable simply by stripping from the coated object.

According to the manufacturer, Striplastic No. 320 is chemically inert, nontoxic, and highly corrosion resistant, and possesses unusual tensile strength. Applications for the material include the protection of stainless steels in fabricating processes; protection of metal parts during assembly; protection of highly polished metal sheets against scratching and abrasion; protection of sheets in cold working or drawing; protection of metals against corrosion; protection of tools, dies, and parts against rust; and protection of metal parts before packaging.

Hammond Model VH-6 Abrasive Belt Grinder-Polisher

For grinding, polishing, deburring, beveling, descaling, and similar operations on metals, plastics, ceramics, and so on, Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo 54, Mich., is offering the Hammond Model VH-6 Abrasive Belt Grinder-Polisher illustrated herewith. Said to be ideal for cleaning and finishing castings, die castings, forgings, stampings, molded plastics, and many other parts, the machine can be used either wet or dry and is equipped with a coolant unit consisting of the tank, pump with independent motor, spray nozzle, sludge pan, valve, and piping. The machine can be changed from vertical to horizontal operation by loosening one cap screw conveniently located on the top rear of the base. A sheet steel sludge pan is arranged to catch all coolant for either vertical or horizontal operation of the machine, the coolant draining directly into the top of the coolant tank.

Hammond Model VH-6 Abrasive Belt Grinder-Polisher

Specifications of the Hammond Model VH-6 Abrasive Belt Grinder-Polisher are as follows: abrasive belt size, 6 x 60 inches; belt working surface, 6 x 12½ inches (Wet-n-Dri) and 6 x 14 inches (Dri only); belt platen, 6½ x 14 inches; size of work table, 6¾ x 10 inches; tilting range of work table, 15 deg. up and 30 deg. down; abrasive belt speed, 3,400 s.f.m.; and motor, 1, 1½, or 2 h.p. 1,800 r.p.m. The motor is totally enclosed and manually controlled, with overload protection.

Roto-Finish Model CW-22-1 Machine

A one-compartment machine for small mechanized deburring and finishing installations, designated as the Model CW-22-1, has been added to the line of Roto-Finish equipment offered by The Sturgis Products Co., Sturgis, Mich. Ac-

NALCO INFRA RED LAMPS

Made Especially for Industrial Use

Not "all purpose" lamps, NALCO Infra-Reds are especially designed for industrial drying and baking. Engineered for production use, they are instantly responsive. Long lasting carbon filament — sealed reinforced base.

Send for "Drying Problems Made Easy"

North American Elec. Lamp Co.
1020 Tyler St. St. Louis 6, Mo.

ROLOCK
PROCESSING CARRIERS

Carriers used in finishing processes must, of course, be built to give long hours of service . . . and withstand rough handling and abuse.

Rolock can help you cut production costs by designing to your specifications any type of Basket, Tray, Rack, Crate, Fixture, etc., as they did with this hinged cover Trunnion Pickling Basket. It will hold 4000 lbs. and revolves to permit uniform acid penetration of a dense load.

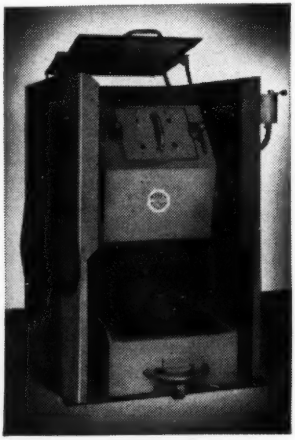
Our catalog shows 225 ideas, many of which you can easily adapt to your own operations. They have been designed for specific jobs to cut costs, speed work, give better results. Send for a copy today!

ROLOCK, INC., 1400 Kings Highway, Fairfield, Conn.

13RL48

CUSTOM-BUILT for Better Work, Easier Handling, Lower Cost

cording to the manufacturer, the machine has sturdy design and operational features that permit the efficient and eco-



Roto-Finish Model CW-22-1 Machine

nomical processing of small parts using the Roto-Finish grinding, deburring, Britehoning, or coloring process. The one-compartment cylinder which measures 19 x 32 inches I.D., is lined with replaceable kiln dried hardwood maple and equipped with a full size lightweight door which has a newly designed molded rubber gasket and is firmly held in place by rugged fast-action cam locks. The safety guard is designed for raising or lowering with a minimum of effort.

Standard equipment of the Roto-Finish Model CW-22-1 Machine includes a forward and reversing switch with synchronized magnetic brake to facilitate loading and unloading; water attachment, including a conveniently located contr valve for adding water to the processin compartment; 1½ h.p. 220-440-volt 6 cycle 3-phase motor with gear reducer and swivel type 3-point suspension hoi pan for loading and unloading the proc essing media.

ALLWOOD

"Vienna Brand" Lime

Made from Limestone that is identical in chemical analysis and geological structure with European Imported Lime. Tests show a "lime cake" made from Allwood "Vienna Brand" Lime equals the finish made from imported lime.

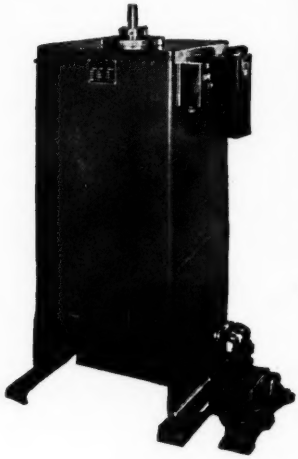
WRITE FOR FULL PARTICULARS

ALLWOOD LIME COMPANY

Manitowoc • Wisconsin

Schauer Vertical Spindle Variabl Speed Lathe

Produced by The Schauer Machine Co. 2060 Reading Rd., Cincinnati, Ohio, fo general finishing operations such as de burring, filing, and polishing of metal an plastic parts, the Schauer Vertical Spin-



Schauer Vertical Spindle Variable Speed Lathe

dle Variable Speed Lathe illustrated here with finds application where it is advantageous to revolve the workpiece in a horizontal plane. The lathe may be obtained in various designs and with accessories such as standard 3-jaw lathe chucks, air operated chucks, collets, expanding mandrels or special holding fixtures. Spindle speeds varying from 4,80 to 100 r.p.m. are provided.

According to the manufacturer, the continuously operating motor, automatic chuck and brake, and other standard features incorporated in the Schauer Speed Lathe combine to ensure rapid finishing and improved production and quality.

the Corporation President

WHO ALMOST SLEPT TOO LONG

For months, T. M. Stanton* had been uneasy about the future of the national economy. But he hadn't been doing anything about it. That's why he was having a nightmare...

"T. M., old boy," one spectre was saying, "how would you like a nice black depression to come along and swallow up your whole company?" And a green-eyed ogre leered, "while you're neglecting your free-enterprise system, we're moving in with *another* system!"

"No!" thundered Stanton, awakening himself. "Gad, what a dream! H-m-m—wonder what I should be doing..."

Here's Something, Mr. President, You Ought to Do Right Away!

Check up on the status, in your company, of the Payroll Savings Plan for the regular purchase of U. S. Savings Bonds. The Plan benefits employees—business—and the nation: It builds financial security for each participant. The Bonds pay $4 at maturity for every $3 invested. 19,000 companies operating the Plan have found that it makes employees more contented—cuts absenteeism—even reduces accidents! The Plan helps to spread the national debt and thus helps secure your business future. How this works is described in the free brochure shown below.

Why Executive Backing Is Vital

War-time emotional appeals are gone. The success of the Plan in your company is liable to dwindle unless a responsible executive *keeps promoting it.* For the good of our common future, make sure that "Payroll Savings" is vigorously maintained! The State Director will gladly help.

Be sure to read *what two business leaders say in this brochure! Copies are available free from the Treasury Department's State Director, Savings Bonds Division.*

**This one is fictitious—but it might be any corporation president.*

The Treasury Department acknowledges with appreciation the publication of this message by

PRODUCTS FINISHING

This is an official U S. Treasury advertisement prepared under the auspices of the Treasury Department and the Advertising Council

Wagner "Flat Top" Zinc Anode

A zinc anode known as "Flat Top" because of its shape has been produced by Wagner Brothers, Inc., 431 Midland Ave., Detroit 3, Mich. The distinctive shape of the anode is intended to prevent accidental confusion of this zinc anode with cadmium or tin ball anodes and thus avoid the addition of unwanted ingredients to plating solutions. According to the manufacturer, the flat top shape is retained throughout the plating process, serving as a means of identification of the zinc plating tank.

Wagner "Flat Top" Zinc Anode

The design of the anode is said to provide a product free from gates and surface flash with improved electroplating characteristics. Flat Top Zinc Anodes are supplied packed in a wooden keg container sealed against contamination.

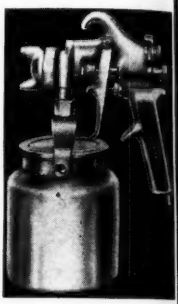
"Permacote" Protective Coating

Metal, wood, leather, and fabric surfaces are said to be protected from corrosion and distortion by a transparent liquid "skin" now being produced under the trade name of "Permacote" by the State Chemical Corp., 1265 Broadway, New York 1, N. Y. Designed for use on surfaces which require protection from moisture, acids, alkalis, alcohol, dyes, dirt, dust, and so on, the material can be applied easily by the brush, spray, or dip method, and forms a tough transparent coating which is claimed to remain permanently flexible and to be highly resistant to abuse by either physical or chemical means. The coating is also said to be resistant to extremes of heat or cold and to resist cracking or chipping regardless of the expansion or contraction of the surface it is used to protect.

Claimed to impart a luster to any surface to which it is applied and to effectively seal in and prolong the life of ordinary paints, lacquers, and varnishes, Permacote is available in 1 and 5-gal. cans, as well as in 50-gal. steel drums.

Kellogg-American Micro-Spray Gun

The American Brake Shoe Co., Kellogg Division, 97 Humboldt St., Rochester 9, N. Y., announces a spray gun designated as the Micro-Spray.



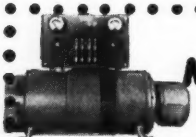
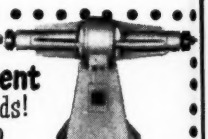
Kellogg-American Micro-Spray Gun

Designed to provide for maximum economy of operation, the gun makes possible even paint distribution and a smooth finish.

The gun is so constructed that cleaning and assembly time is held to a minimum. The fluid needle assembly can be removed in one piece for cleaning. Spray width can be controlled accurately, and a built-in lever allows for quick finger-tip control of air volume. Only three spray heads are needed to cover the full range of paint spray materials. Air cap and fluid nozzles are designed so that any of the three combinations may be used for both siphon and pressure spraying. The gun is said to have excellent balance by reason of short overhang and minimum overhang weight.

"Alpaste" Paint Base Material

An aluminum paste base material known as "Alpaste" is now being distributed by the Aluminum Import Corp., 620 Fifth Ave., New York 20, N. Y. Since aluminum paint made with the material


Write for complete **Catalog** of
MGC Plating and Finishing Equipment
Guarantees better plating results...tell us your needs!
MOTOR GENERATOR CORPORATION, BOX PF-38, TROY, OHIO


is actually liquid metal, the paint is said to provide an armor-like, durable, protective shield on metal, concrete, and other materials which bars corrosion and shuts out moisture. In addition, due to the manner in which millions of minute aluminum flakes overlap each other in the paint, the latter has unusual opacity and covers the surface thoroughly, it is claimed.

Aluminum paint made with Alpaste is applicable with a brush or spray and can be used both for finishing and as a primer. In outside applications, the paint is said to withstand the harshest weather attacks, and, when used on inside surfaces, the paint is claimed to brighten the dullest interior with a lasting, easy-to-clean surface that resists smoke, grease, and fumes.

"Zincilate" Anti-Corrosive Coatings

Two new types of anti-corrosive "Zincilate" coatings which are designed to air-dry without baking are announced by Industrial Metal Protectives, Inc., Dayton 2, Ohio. According to the manufacturer, the coatings are sufficiently flexible that sheets, pipes, and forms can be bent double after coating without breaking the protective film. Overcoatings of enamel, paint, or wrinkle finishes may be applied over Zincilate after five minutes of air-drying and both coatings baked at the same time, it is claimed.

The Zincilate Anti-Corrosive Coatings are adaptable to production-line applications by the dip, spray, brush, or roller-coat method using conventional finishing equipment. The coatings may be used in the manufacture of air conditioning equipment, bakery equipment, automotive parts and assemblies, valves, sheets, pipe, screens, and other products, as well as for the maintenance and repair of existing structures.

Periodic Reverse Plating Electronic Relay Timer

Production of an electronic relay timer for periodic reverse plating is announced by the Platers Research Corp., 59 E. 4th St., New York 3, N. Y. The unit may be connected either to a generator or rectifier and has a capacity of 10 amperes on the plating line. The plating time cycle is up to 20 seconds, while the reverse plat-

Here's the key
TO PROFITABLE
SILVER PLATING!

GRANIUM "B"
CYANIDE

FOR SILVER PLATING THAT IS

- HARDER
- LONGER LASTING
- TARNISH RESISTANT

Merely add Granium "B" Cyanide to your regular silver solution before electroplating. Use this precious metal complex salt in any desired ratio, however 25% Granium "B" to 75% silver is recommended for most industrial and commercial plating.

Granium "B" Cyanide is easy to use and produces an astonishing silver plate *harder, longer lasting, tarnish resistant.* With superior plating and fewer rejections the result is a lower production cost. And *that* adds up to greater profits for you! Try this revolutionary new additive. You too will be amazed at the results.

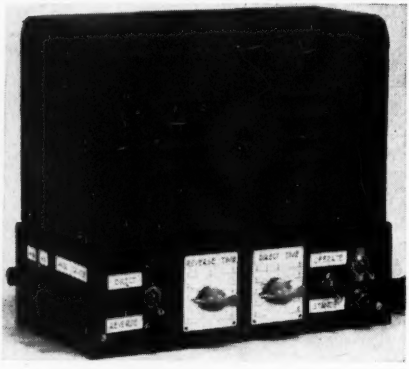
Granium Alloys for platinum, gold and non-ferrous metals are also available. Complete information and samples upon request.

WRITE IMMEDIATELY
Address Department P-2

GRANIUM-GRAY
Products
6100 EAST WASHINGTON BOULEVARD
E. LOS ANGELES 22, CALIF.

Chemical Engineers Since 1905

ing cycle time is up to 5 seconds. Any combination of direct and reverse current timing within these ranges may be



Periodic Reverse Plating Electronic Relay Timer

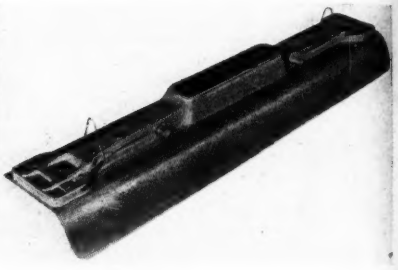
obtained by the simple adjustment of two control knobs.

A switch is provided for turning off the periodic reverse and to permit only conventional plating if desired. An additional standby switch is provided so that where plating is interrupted, the unit remains ready to operate without the need for a warm-up period.

Sylvania HF-100 Industrial Fluorescent Fixture

Featuring a "weatherized" finish which is said to make the unit highly resistant to rust, corrosion, pitting, and crazing, the Sylvania HF-100 Industrial Fluorescent Fixture shown herewith is now being introduced by Sylvania Electric Products Inc., 500 Fifth Ave., New York, N. Y. The plain steel fixture parts are specially processed and Miracoated, as well as baked. In the processing of the tophousing and the reflector, an electrolytic action is said to ensure complete coverage of the treated parts and prevent rusting or oxidation of the steel. The treatment chemically roughens the metal to provide highly adhesive surfaces for the Miracoat, which is a plastic finish compounded of clear, durable, thermosetting paint resins and white pigments. In addition to its protective qualities, the white Miracoat finish on the reflector is claimed to provide a reflection of not less than 86 per cent and a resulting light efficiency of 85 per cent.

Additional features of the Sylvania HF-100 Industrial Fluorescent Fixture includes hook slots in both sides of the tophousing for easy mounting with specially developed single hanger hooks supplied with the unit, and a turned down lip to provide maximum rigidity and minimize



Sylvania HF-100 Industrial Fluorescent Fixture

collection points for dust, lint, and moisture. To further simplify cleaning and inspection of ballast and wiring, the reflector is attached to the tophousing by means of captive latches from which it can be detached without removing any nuts, bolts, or similar devices.

Stamped from a single sheet of 20-gauge steel, the tophousing of the fixture is constructed on a bridge-like principle, with the most vertical surface at the point of greatest strain and a wide flange to provide added strength and a substantial backing for the reflector. Designed as a 2-lamp, 40-watt fixture, the HF-100 is provided with a pair of knockouts to allow for the use of another lamp if desired. The fixture can be installed individually or in a continuous row.

GOLD PLATING SOLUTIONS

In All Colors

Guaranteed 100% Pure Gold Content
Troy Weight - Color Constant
Tarnish Resistant
Proven Quality by the Acid Test

Write or call our experts about your plating problems

Davis-K-Products Co.

54 West 22nd St., New York 10, N. Y.
Oregon 4-4108
4-4109

New Literature

"Flexspeed" Bulletin VCSV-1 has been published by Divine Brothers Co., Utica 1, N. Y., describing the "Flexspeed" Variable Speed Lathe for buffing and polishing. Specifications of the various available models are included in the bulletin. Copy free upon request.

Lupomatic Tumbling Barrel Bulletins have been issued by Lupomatic Industries, Inc., 4410 Bullard Ave., New York 66, N. Y., describing tumbling barrels of several types (for cutting down, deburring, burnishing, and polishing), and tumbling processes and materials. Copy free upon request.

Devoe Painting Guide. The Devoe & Raynolds Company, Inc., has released a 40-page book which is designed to provide a guide to the proper use of paint and related materials. The book describes a method of painting the major types of surfaces; namely, metal furniture, machinery, tools, metal toys, building blocks, and other surfaces upon which paint is applied. The book has an index on the cover to simplify the location of the desired information. Copy of the book may be obtained by sending 50 cents to the Sales Training Dept., Devoe & Raynolds Co., Inc., 787 First Ave., New York 17, New York.

Schneible Bulletin No. 410. A 20-page bulletin presenting the company's comprehensive line of Multi-Wash equipment for the control and disposal of dust fumes and odors has been released by the Claude B. Schneible Co., 2827 25th St., Detroit 16, Mich. The bulletin describes the function of the equipment through cutaway views of the Multi-Wash collector in operation, showing how contamination is removed with a minimum of attention and maintenance. In addition, settling and de-watering tanks, "Wearproof" sludge pumps, "Uni-Flo" dust hoods, and the Schneible Velocitrap for removing heavy solids from the air before it reaches the collectors are also described. Copy of Bulletin No. 410 free upon request.

PURIFIES ZINC SOLUTIONS

"Throwns Down" heavy metal impurities. Improves luster of deposit.

Guaranteed Fool-proof

Wire collect for free information.

Sulphur Products Co. Inc.

GREENSBURG 6, PA.

The Finishing Touch — **By J. A. Patterson**

"He says th' light's better in here!"